Registered at the G.P.O., Sydney, for Transmission by Post as a Newspaper. Published Weekly. Price 1s.

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—14TH YEAR. SYDNEY: SATURDAY, SEPTEMBER 3, 1927. No. 10.

THE MEDICAL JOURNAL OF AUSTRALIA

VOL. II.—14TH YEAR. SYDNEY: SATURDAY, SEPTEMBER 3, 1927. No. 10

Authors of articles submitted for publication are requested to read the following instructions and to comply with them.

All articles must be typed with double or treble spacing. Carbon copies should not be sent. Abbreviations should be avoided, especially those of a technical character at times employed in ward notes. Words and sentences should not be underlined or typed in capitals. The selection of the correct type is undertaken by the Editors. When illustrations are required, good photographic prints on glossy gaslight papers should be submitted. Each print should be enclosed in a sheet of paper. On this sheet of paper the number of the figure and the legend to appear below the print should be typed or legibly written. On no account should any mark be made on the back of the photographic print. If no good print is available, negatives may be submitted. Line drawings, graphs, charts and the like should be drawn on thick, white paper in India ink by a person accustomed to draw for reproduction. The drawings should be large and boldly executed and all figures, lettering and symbols should be of sufficient strength and size to remain clear after reduction. Skiagrams can be reproduced satisfactorily only if good prints or negatives are available. The reproduction of all illustrations but especially of skiagrams entails the sacrifice of time and energy and is expensive. Authors are expected to take a corresponding amount of trouble on the preparation of their illustrations, whether skiagrams, photographs, wash drawings or line drawings. The references to articles and books quoted must be accurate and should be compiled according to the following scheme. The order should correspond to the order of appearance in the article. The initials and surnames of the authors, the full title of the article or book, the full (unabbreviated) title of the journal in which the article appears, the date of the issue (day, month and year) and the number of the first page should be given in this sequence.

Table of Contents

THE INTERPRETATION OF X RAY FILMS OF THE CHEST IN CHILDREN.[1]

By H. M. HEWLETT, M.B., Ch.B. (Melbourne), M.R.C.P. (Edinburgh),
Honorary Radiologist, Children's Hospital, Honorary Radiologist, Saint Vincent's Hospital, Melbourne.

THE interpretation of the varying gradation of shadows which make up an X ray film of the chest is one of the most difficult problems in radiology. To assess the value of these shadows and markings and to draw conclusions as to the pathological causation require considerable experience and judgement. Perhaps in no other branch of this specialty is it so necessary to have a thorough history of the patient, including not only the results of the clinical examination and physical signs, but also a very complete and exhaustive statement of all previous illnesses. Especially is it necessary to enumerate the specific infections, such as whooping cough and measles, also to discover whether catarrhal conditions of the naso-pharyngeal region have been frequent or whether there is evidence of adenoids or pathological tonsils or infection of the accessory sinuses. Armed with this information, the radiologist generally first makes a screen examination, noting the type of chest and the general transradiancy of the lung fields, the movement of the diaphragm and the appearance of the posterior mediastinal space.

In the majority of chest conditions in children sent for X ray examinations the question of the presence of tuberculosis is generally the chief consideration and when it is said that about 75% to 80% of city children up to the age of puberty have had some pulmonary tuberculous infection, the physician evidently wants to know whether there is evidence of an active tuberculous infection of the lungs or of the intrathoracic lymphatic glands. Tuberculous disease of the paratracheal and perihilar lymphatic glands is mostly a disease of symptoms in which clinical signs are of very little use indeed, and it is here that the X ray film finds its greatest usefulness. We know from the pathological studies of Ghon and others that the primary focus is almost anywhere in the lung itself, most often perhaps in the upper right lobe anteriorly, the tubercle bacillus reaching the bronchi by inhalation or through the blood or lymphatic stream from a focus in another part of the body. The primary focus is then a conglomeration of tubercles with some slight reaction of a bronchopneumonic nature about them, the whole focus probably not being larger than a small pea. Then follows a tuberculous enlargement of the lymphatic glands drained by the area corresponding to the focus and consequently we find that most of the enlargement is about the right paratracheal and perihilar glands. After the glands have become infected, the primary focus in the vast majority of cases heals and sometimes cannot be detected. At other times only a small dense calcareous nodule remains and at other times only strands of fibrous tissue. Sometimes small linear pleural thickenings are the only remaining signs of the primary focus.

In a child who has had no previous infection, the glands do not cast any shadow, but such a finding is extremely rare and according to the report of the Clinical Division of the Committee on Medical Research of the National Tuberculosis Association "the ideal normal child is a hypothetical impossibility." Consequently we cannot produce a film of a normal chest, but with experience each of us sets up a standard of what I might call "a chest within normal limits." Such a film, if divided into three vertical zones, would not show the hilum shadow extending out beyond the inner zone. This shadow may show within it small dense calcified glands indicating old healed inflammatory lesions, possibly, but not necessarily tuberculous.[1] In the mid-zone we find the trunk shadows fading into their subdivisions, but never going to the extreme apices. The peripheral zone contains radiating lines continuous with the subdivision of the main trunk, but never reaching the periphery. When these shadowy markings do not behave according to the above so-called normal, the indications are that an inflammatory condition, past or present, has been or is in existence. The changes may accompany a tuberculous process, but are not necessarily an indication of tuberculosis. In early tuberculosis the first change noted is generally an increase in the width of the hilum shadow, it extending into the middle zone. This is most frequently observed in infants where we get the greatest increase in the size of the shadow. This shadow is so great that it is often mistaken for a neoplasm, especially as the lateral border is generally convex and smooth and the density of the mass uniform. This homogeneous density is said to be due to caseation of the glands with inflammatory matting together. All massive glandular enlargements at the root of the lungs in infants are not tuberculous, as on one occasion in my experience they were due to a retropharyngeal abscess and subsided rapidly when the abscess was evacuated. In older children the tuberculous glands do not attain the same large size they do in infants and are again often unilateral and frequently are sharply defined with a dense outline due to caseation and fibrosis. Frequently these large glands press on the pulmonary vessels and lymphatics, causing the lung markings to become broad and spread unduly far out, especially about the upper lobes. Very frequently these broad markings are regarded as indicating a spread of the

[1] Read at a meeting of the Melbourne Pædiatric Society on June 29, 1927.

[1] Since I wrote the above the last number of the American *Journal of Roentgenology* has come to hand and in it Opie, of the Phipps Institute, who was called in to assist the Committee of the Tuberculosis Association, is widely reported in one of the reports. He made a study of excised lungs in one hundred children dead from all causes and after chest films had been made. He found that calcified lymphatic glands in the lungs and hilum were invariably referable to tuberculosis. He concluded that inflammatory lesions do not cause calcification in either location. It was also noted that calcified tuberculous lesions increased with age and that children of families in which some member suffered from open tuberculosis, manifested these lesions more often than children not so exposed. Some of the members of the Committee agreed that patients with calcified glands had developed more resistance to tuberculous infections.

disease out from diseased lymphatic glands, but this is almost unknown. Frequently the markings are very pronounced and when the child is reexamined some months or a year later, the glands are smaller and the markings greatly reduced in thickness and density, this being strong presumptive evidence that pressure was the causative factor.

Other conditions causing this engorgement of the markings are mitral disease when failure is taking place and also mediastinal neoplasms.

I often feel dissatisfied with the information I am able to give the physician after inspecting an X ray film of a child's chest, especially if a poor history is sent. Pointing out fibrosis, caseous or even calcified lymphatic glands and even stating that they are probably tuberculous does not help very much. Pointing out the changes found, however, may explain some of the signs and symptoms, but by the X rays it is very difficult to determine activity or quiescence and this can generally be determined better by clinical methods.

Other rarer types of tuberculous pulmonary diseases in children are:

1. Tuberculous pneumonia which frequently follows the rupture of a caseous lymphatic gland, causing a widespread pneumonic consolidation, rapidly breaking down with cavity formation. This is frequently associated with active tuberculous bone disease or tuberculous meningitis.

2. Hilum tuberculosis—a tuberculous infection spreading out into the parenchyma of the lung from the hilum and appearing on the film very like a pneumonic consolidation, except that in the latter the base of the triangle of spread is at the periphery and in the former at the hilum.

3. Miliary tuberculosis in children virtually has the same appearance as in adults and almost invariably is part of a general acute tuberculous infection. It is very frequently associated with a tuberculous meningitis.

4. An adult form. This type of tuberculosis is also rare and is found more frequently in older children and is a chronic condition where fibrotic changes are more pronounced. Often it is a mixture of tuberculous nodules, small patches of bronchopneumonia, caseation and cavity formation.

Note that a subdivision of "peribronchial tuberculosis" has not been included. Some years ago this was regarded as a definite lesion, but Osler was one of the first to doubt it from clinical data. A large number of patients whose condition was diagnosed as peribronchial tuberculosis, have been watched for four or more years and reexaminations have not revealed any change. Two patients in a moderately large series died, but neither death was due to tuberculosis.

Before I conclude I would like to emphasize the point that the radiologist should be allowed a reexamination after some weeks or months before committing himself to a diagnosis. We know the physicians often do this and it is very important in the pneumonic consolidations occurring at the bases which in children are often tuberculous. A reexamination is often the only method of determining the nature of this lesion.

THE X RAY DIAGNOSIS OF FOREIGN BODIES IN THE AIR PASSAGES AND THE ŒSOPHAGUS.[1]

By COLIN MACDONALD, M.B. (Melbourne), D.M.R.E. (Cantab.),
Melbourne.

THE branch of the subject under discussion tonight to which I want briefly to refer, is that of the radiology of foreign bodies in the air passages and in the œsophagus.

The name of the doyen of endoscopists, Chevalier Jackson, of Philadelphia, and his radiologist, Willis Manges, are those most closely associated with this particular study. Their classical papers were published in 1920. I can add nothing original to their observations and my subsequent remarks will be an epitome of their work. However, it must not be forgotten that to Dr. Samuel Iglauer, of Ohio, belongs the distinction of having first drawn attention to certain "indirect" signs of non-opaque foreign bodies in the air passages and to these indirect signs I shall refer later.

The X ray diagnosis of foreign bodies in these situations is an interesting and sometimes very difficult investigation. This difficulty is dependent on certain factors. These factors are:

1. The degree of radiopacity of the foreign body, whether opaque or non-opaque.

2. The size of the foreign body. The size determines where the intruder will become lodged and also what degree of obstruction it will cause.

3. The position of the intruder in the passages. All X ray diagnosis resolves itself into a study of comparative photographic densities. If then, a foreign body is overlying the dense vertebral column it will be more difficult of demonstration than if it were lying clear in the lung field away from the spine, hilar and cardiovascular shadows.

4. The natural composition of the intruder, whether vegetable or organic. This factor is distinct from the radiopacity referred to before. The pathological reaction induced and the subsequent X ray appearances vary greatly as to whether the foreign body is vegetable or metallic.

5. The length of time the intruder has remained *in situ*. This factor too is bound up with the pathological changes induced.

6. The age of the patient. The younger the patient, the more difficult the technique.

OPAQUE FOREIGN BODIES.

Large Opaque Foreign Bodies.

Large opaque foreign bodies, particularly if metallic, are generally easy to demonstrate radiographically.

Errors in preparation of the patient, for example failure to remove pins and metallic bodies attached to articles of clothing, have several times been reported, even in the recent literature, as having given rise to a diagnosis of foreign bodies in the air passages or œsophagus when actually there was none present.

[1] Read at a meeting of the Melbourne Pædiatric Society on June 29, 1927.

The lie of the body as seen on the screen or film is valuable in differentiating whether it is in the trachea or œsophagus, for example a disc-shaped foreign body seen in the sagittal plane of a radiogram, if lying flat in the postero-anterior view, must be in the œsophagus; if seen on the edge in the postero-anterior view, the trachea must be the site of lodgement. This is on account of the anatomical construction of the trachea with a free space in the cartilaginous rings posteriorly and likewise because the foreign body must necessarily enter the trachea through the glottis in a sagittal plane.

The œsophagus, on the other hand, is a closed, flattened tube, lying in a plane at right angles to the glottis.

Barium mixtures can be seen to pass posteriorly to tracheal foreign bodies and to divide and go around œsophageal foreign bodies.

Small Opaque Foreign Bodies.

If the foreign bodies are small, even though quite opaque, they may be overlooked through overlapping the spine or the cardiovascular or root shadows and so it is expedient that lateral and oblique views in addition to the postero-anterior views should always be taken.

On the other hand, the calcification that takes place so frequently at the lung roots, is sometimes liable to be mistaken for a relatively opaque foreign body, for example a tooth. I have seen this mistake made before now.

Non-Opaque Foreign Bodies.

Non-Opaque Foreign Bodies in the Trachea.

Direct Demonstration.

A foreign body which is ordinarily considered non-opaque, may sometimes be directly demonstrated if lodged in the trachea, on account of its being surrounded by the translucent air which offers a good contrasting medium; and so may be shown in the antero-posterior or the lateral views, more often in the latter.

Indirect Signs.

But if these non-opaque foreign bodies in the trachea cannot be demonstrated directly as described, certain "indirect" signs may be present upon which we can fall back for our diagnosis.

Here as elsewhere the mechanics of the situation determines the presence of the X ray signs. For example, a water melon seed, large enough to enter the trachea, may be too large to enter a bronchus and because of its flat shape may allow the free passage of air both during inspiration and expiration; so that obstructive emphysema may be entirely absent and, as it is the expiratory obstruction that causes the "indirect" X ray signs, these indirect signs may also be absent.

Later owing to the movement of the foreign body "indirect" signs may appear, if the original tracheal intruder subsequently reaches the bronchi.

On the other hand, a tracheal foreign body that does not move freely and because of its size and shape interferes with respiration to a considerable degree, may manifest the signs of expiratory obstructive emphysema of both lungs, namely: (i) increased translucency of both lung fields at expiration compared with the normal; (ii) the diaphragm is depressed on both sides and is actually lower in expiration than in inspiration, this being due to the action of the more powerful intercostal muscles overcoming the physiological raising of the diaphragm on expiration; (iii) the heart is more in the median line and more vertical, appearing to be entirely above the diaphragm. The heart is rotated so that its transverse diameter is less at expiration than at inspiration. These signs will be slight or quite positive according to the degree of obstruction.

Occasionally they can be distinguished only after comparing radiograms made after removal with those made before removal. They are always more pronounced if the child struggles or cries, but it frequently occurs that the patient will breathe quietly with the utmost determination, for the reason that any violent expiration is apt to force the foreign body upwards against the glottis and so produce an agonizing paroxysm.

In Jackson's experience foreign bodies in the trachea only rarely give rise to "indirect" X ray signs.

Non-Opaque Foreign Bodies in the Bronchi.

When the non-opaque foreign bodies which are nearly always vegetable, get below the trachea, the X ray signs depend on: (i) the position of the foreign body in the bronchial tree; (ii) its size, one of the factors on which the degree of obstruction depends; (iii) its nature, whether vegetable or organic; vegetable substances usually set up a violent reaction in the mucosa of the bronchi with secondary swelling and pronounced obstruction; (iv) the time it has remained *in situ*. On this the supervening lung changes depend.

Foreign Bodies in a Main Bronchus and Producing Complete Obstruction.

If the foreign body is in a main bronchus, generally the right it is said, due to anatomical considerations, and if it is large enough to cause complete obstruction, the X ray signs are: First, temporary overdistension; later, collapse of the obstructed lung.

At first the lung field on the affected side manifests increased translucency at expiration compared with the unaffected side. The diaphragm shows depression and limitation of movement. The mediastinum is displaced towards the unaffected side on expiration, with an inspiratory excursion towards the affected side.

This is an example of the phenomenon of respiratory excursion of the mediastinum, the radioscopic finding which has been so fully investigated by Dr. Rist, of the Hospital Laennec, Paris.

Later the temporary over-distension or emphysema is followed by collapse, atelectasis or drowned lung, if the obstruction is not relieved.

Then the highly translucent lung field gives place to a mottled opacity.

The diaphragm is elevated. The mediastinum is displaced to the affected side and manifests an excursion to that side in inspiration.

Foreign Bodies in a Main Bronchus, but not Producing Complete Obstruction.

If the foreign body is in a main bronchus, but not competely obstructing it, then the appearances are those of an acute, unilateral, obstructive, expiratory emphysema. This is due to the fact that air may be able to pass during inspiration, but, owing to the physiological contraction of the bronchus during expiration, obstruction is present during this phase.

The X ray signs in this type then are: (i) increased translucency of affected lung field on affected side at expiration; (ii) limitation of movement of the diaphragmatic dome on the affected side, with flattening of the dome seen on expiration; (iii) displacement of mediastinum to the unaffected side on expiration. This partial obstruction may later become complete owing to constriction produced by inflammatory exudate.

Complete obstruction is not necessarily associated with collapse, because the air passages are probably already filled with fluid, producing a condition of "drowned lung." Infection occurs as the result of obstruction to the normal drainage of the air passages.

The lung changes in infection supervening on a metallic foreign body are usually not those of ordinary pneumonic consolidation either of the lobar or lobular types. The usual condition obtaining in metallic foreign bodies is one that is known as "drowned lung." Drowned lung is defined by Jackson as a condition in which the air passages are filled with pus without breaking down of the structural elements of the lung.

It is therefore not for a considerable time that a true pulmonary abscess developes, though such may eventually supervene.

The recurrent pneumonias, said to occur in cases of overlooked foreign bodies, are often then really cases of recurrent "drowned lung," and the remissions in these pneumonias represent relief of obstruction and subsequent drainage and escape of pus from the "drowned" areas. Consequently remission of pulmonary symptoms in summer does not exclude the possibility of foreign body.

As a corollary to the above Jackson makes the statement that prolonged pulmonary suppuration due to foreign bodies is not often followed by permanent changes of the type which follows other prolonged pulmonary suppurations. This explains why the removal of the foreign bodies, even after they have been *in situ* a considerable time, may be followed by complete recovery.

On the other hand, vegetable substances usually set up such a violent reaction that if they remain *in situ* for a few weeks in the bronchi of children, they are almost invariably fatal. The violent laryngo-tracheo-bronchitis that is induced by vegetable foreign bodies in the trachea or bronchi may give a clinical picture suggesting laryngeal diphtheria. The interesting point is raised as to whether some illnesses diagnosed as primary laryngeal diphtheria with "negative" swabbing are ever really due to inhalation of a vegetable foreign body.

Non-Opaque Foreign Bodies in one of the Smaller Bronchi.

When the foreign body is in one of the smaller bronchi, these "indirect" signs are less pronounced, namely the increased relative translucency on expiration is confined to the particular lobe which the involved bronchus aerates, the degree of diaphragmatic and mediastinal phenomena will be proportionate to the amount of lung involved.

Small Foreign Bodies in one of the Bronchioles.

Small foreign bodies in one of the bronchioles may result in no recognizable abnormality until the onset of infection has produced an opacity of the lobule concerned. This may be followed by extension of infection or may remain localized for long periods; a small deep-seated area of opacity in the base of the lung should always therefore arouse suspicion of a foreign body in a bronchiole.

Infection.

It is said that overlooked foreign bodies may give clinical pictures simulating:

1. Pneumonia, though it is interesting that McCrea, Jackson's physician at Philadelphia, is emphatic that in these cases no true pneumonic consolidation occurs.
2. Bronchopneumonia.
3. Empyema.
4. Tuberculosis.
5. Asthma.
6. Bronchiectasis.
7. Pulmonary abscess.
8. Enlarged thymus.
9. Enlarged mediastinal glands.
10. Enlarged adenoids and tonsils.
11. Postanæsthetic pneumonia.
12. Postanæsthetic massive pulmonary collapse.

This leads to the conclusion that foreign bodies in the air passages or œsophagus should be thought of in every case with any symptoms referable to the lower air passages.

You will notice that I have mentioned the œsophagus as well as the pulmonary tree.

Œsophageal foreign bodies give rise to pulmonary symptoms in three ways:

1. Overflow of secretions in attempt to swallow through the obstructed œsophagus.
2. Erosion of the foreign body through the œsophagus into the trachea.
3. Trauma inflicted on the larynx during attempts at removal, either digital or instrumental, the foreign body being present or not.

Jackson makes the statement that tracheo-bronchial symptoms are present in all cases of obstructive foreign bodies in the œsophagus. While foreign bodies may simulate many other conditions, certain other conditions may simulate foreign bodies and the two most important of these are:

1. Primary laryngeal diphtheria.
2. Bronchial compression by extrabronchial disease, for example mediastinal adenopathy.

Technique.

Technique is a very important part of the procedure in eliciting indirect signs of non-opaque foreign bodies.

Films must be exposed at both inspiration and at expiration and so rapidly that each phase is caught without movement of the patient. Movement is fatal to the interpetation of lung shadows. I consider that all chest films should be exposed at a minimum distance of about one metre and longer wherever possible. Distortion is lessened and detail sharpened at this distance.

As has been indicated by the previous speakers, lung detail in the child is never so sharp as in the adult.

It is important also to have the tube and the child accurately and consistently centred with regard to each other for all exposures. If the central ray from the tube is not passing both through the midline of the vertebral column and the sternum and at right angles to these structures, it is easy to get an apparent mediastinal displacement or an apparent loss of translucency of either lung field; in these cases, therefore, special precautions must be taken to insure that this source of error due to postural asymmetry is obviated.

Conclusions.

The conclusions of Jackson and Manges are these: Whilst in opaque foreign bodies the lung shadows are of comparatively little importance in diagnosis, in non-opaque foreign bodies the diagnosis may turn upon the interpretation of the shadows of every part of the lung fields, as well as the mediastinal structures, the diaphragm and the chest wall.

HILUS TUBERCULOSIS IN CHILDHOOD.[1]

By Douglas Galbraith, M.D. (Glas.),
Honorary Physician to Out-Patients, Children's Hospital, Melbourne.

Introduction.

In the discussion tonight on diseases of the chest in childhood, I have the honour of opening the question of hilus tuberculosis. Let me say at the onset that I fully realize the difficulties of the subject and my remarks will be those of a seeker for information rather than dogmatisms about a condition on which individual opinion varies considerably. In an hospital such as ours we have a large amount of potentially tuberculous material coming under observation. Some of us think that an appreciable percentage of this material in the physicians' clinique really is tuberculous. Others think that tuberculosis there is rare. We all seem to be working along our own grooves and it is to be hoped that a meeting such as this will lead to the exchange of opinions and experiences with resulting benefit to all of us. In particular the physicians wish to ask for an expansion of the help given by the radiologist in the diagnosis of pulmonary tuberculosis.

[1] Read at a meeting of the Melbourne Pædiatric Society on June 29, 1927.

The Incidence of Tuberculosis.

In various series of consecutive autopsies performed on children who died under two years from all causes, the percentage showing evidence of pulmonary tuberculosis has been over twenty. For example, Dunn and Cohen[(1)] in 661 autopsies found lesions in 20%. The returns of the registrars in England and Wales show that during the period 1906 to 1910 one out of every ten deaths was due directly to tuberculosis and that in the first five years of life nearly 8,000 children were carried off by it.

It is hard to estimate accurately the total number of persons suffering from pulmonary tuberculosis at present in Victoria, but figures kindly supplied to me by Dr. Cumpston show that in each year since 1920 over 1,000 new infections are reported. It is of interest to note that the mortality rate approaches very close to the incidence rate, so that obviously it is only the patients with advanced tuberculosis who ever get reported, and the true incidence rate is certainly very much higher. This gives some notion of the number of children there must be in contact with open tuberculosis.

Types of Infection.

The simplest classification of types of tuberculous pulmonary infection in childhood appears to be:

1. Miliary and generalized tuberculosis.
2. Tuberculous pneumonia.
3. Chronic pulmonary tuberculosis of the adult type ("fibroid phthisis").
4. Hilus tuberculosis.

I propose to limit my remarks to the fourth type—hilus tuberculosis.

Hilus Tuberculosis.

Mode of Infection.

In bone, joint and superficial gland tuberculosis the infecting organism has been shown to be of the bovine type in a large percentage of the cases, thus pointing to infection by ingestions. In pulmonary tuberculosis, on the other hand, the consensus of experienced opinions is that inhalation of the human bacillus is the mode of infection in the large majority of cases. Von Pirquet considers the figures in childhood to be as high as 95%. Workers in the New York Department of Health estimate that bovine infection causes less than 10% of all deaths from tuberculosis in young children.[(2)]

The views put forward by Kuss and Ghon[(3)] have been substantiated by many observers that in almost every case there is a primary subpleural focus usually in an upper lobe and most frequently in the right side. In this subpleural situation the inhaled bacilli form a typical tubercle. Probably many of us have developed such a tubercle at some period of childhood.

In the majority of cases it is walled off and heals, but, if the child's resistance is lowered, the tubercle caseates and infection of corresponding lymphatic glands, the hilus glands, occurs. There again, the infection may be walled off, for resistance to tuberculosis is strong between the ages of five and fifteen years, but, if another lowering of the resistance occurs, perhaps after measles or some other debilitating disease, the hilus glands caseate and a spread of the infection occurs. This spread is most commonly back into the lung tissue by the peribronchial lymphatics, but there may be direct tissue spread or rupture of a caseous gland into an air passage followed by rapid dissemination or even a spread into the blood stream by way of the thoracic duct and the *vena cava*. This then is the suggested pathogenesis of the condition we call hilus tuberculosis. Perhaps Dr. Webster will crystallize for us the opinions he has formed from his own experience.

It seems to me that the term "hilus tuberculosis" does not altogether cover the picture that I have of the condition, since in most cases there is some degree of infection of the pulmonary tissue. The name "chronic lymphatic pulmonary tuberculosis" might be suggested to involve this wider conception.

The Clinical Picture of Hilus Tuberculosis.

For some time past we have been observing in the clinic children who present a clinical picture corresponding with that described by Rivière and others as being typical of the condition hilus tuberculosis. Dr. Kate Campbell has had the care of these patients for some months past and I am indebted to her for many of the details obtained. Perhaps the easiest way to present the picture will be to describe a typical case.

A child, usually not younger than eight years, is brought along with the following record. His father or mother or a near relative has consumption, the child himself has been off colour for some months past. He is not thriving, gets very easily tired and is disinclined for games. He is not gaining weight at normal rate, his appetite is poor and he catches cold readily. There is often some cough, occasionally "brassy" in character, but usually just dry and "teasing." Occasionally chest pains are complained of and not infrequently there is a history of night sweats. Investigation does not reveal anything suggestive of rheumatism or dyspepsia and the urine is normal. So that we have a toxæmia without any apparent cause. Physical examination is proceeded with. The boy is usually under weight and rather pale. Sometimes there is an excessive growth of fine downy hair on the body and limbs. Whilst the general examination reveals no abnormality, some of the following signs are found:

1. Paravertebral dulness in the interscapular spaces, more particularly on the right side, extending for more than an inch outside the spinal processes. A light percussion stroke should be used and any difference in the thickness of the muscle pad on the two sides must be taken into account. Some observers describe a "dead" feeling to percussion over the affected side, due to loss of tone of the underlying muscle.

2. Raising of the pitch of the respiratory murmur and increased vocal resonance over the area of impaired percussion note.

3. Diminished air entry into the corresponding lung.

4. D'Espine's sign is present. Some confusion appears to exist about the definition of this sign Essentially it consists of the shifting downwards of the level of changing from the tracheal to the lung voice, when the patient speaks in a whisper, and the bell of the stethoscope is placed over the thoracic vertebral spines. It is advisable to get the patient to fold his arms and to arch the back slightly by bending the head forwards. In the normal chest of a child under ten years of age the tracheal note should end at the seventh cervical or first dorsal vertebra. From ten to twelve years the level is at the first and second dorsal and over twelve years about the third dorsal. If the tracheal note is heard below these levels, the d'Espine sign is present.

Much less common signs are:

5. Dilatation of superficial veins of the upper part of the chest wall, more usually on the right side.

6. A degree of cyanosis or even œdema of the face, a sign usually found only in younger children.

7. Persistent râles near the nipple and in the axilla.

Of forty-seven children attending the clinic for chronic chest conditions in the past six months, seven children are regarded as furnishing definite examples of hilus tuberculosis. The incidence of symptoms and signs in these seven has been detailed by Dr. Campbell as follows:

Anorexia	90%
Undue fatigue	80%
Failure to gain weight satisfactorily	90%
Cough	100%
Expectoration	40%
Night sweats	100%
Increased paravertebral dulness	80%
D'Espine's sign present	90%
Poor air entry into one lung	50%
Râles present	10%

It is also noted that there was a family history of tuberculosis and the history of exposure to infection in every case.

The next step is the application of the von Pirquet test. Should this not yield a reaction, I think we are justified in ruling out a tuberculous infection. It is wise, however, to repeat the test in a week's time, as about 5% of patients will give a reaction then, although on the first occasion they did not do so. It is commonly supposed that a positive result in a child over, say, five years of age is of no particular significance. Personally, I am not so sure. Even in Europe, opinion on the point is changing somewhat. In one large series examined in Holland, only 20% of children at six years gave a von Pirquet reaction and 30% at nine years.[4] In Australia I think the figures would be even lower and it would be a help if the test were carried

out as a routine on all patients, medical and surgical, admitted to the Children's Hospital.

Examination of the sputum uniformly fails to reveal tubercle bacilli.

Discussion.

This then is the type of patient we come across not infrequently and we have to express our opinion as to whether or not we regard tuberculosis as the underlying cause of the toxæmia. We know that enlargement of the hilus glands may be caused from conditions other than tuberculosis. The child may have enlarged tonsils and adenoids or disease of the maxillary sinus, with consequent continued infections of the upper respiratory tract, and therefore, we send all patients about whose condition we are in doubt to the Throat and Nose Department for a special opinion. Bronchiectasis has to be considered as a possible cause, although as a general rule a child with a minor degree of bronchiectasis manifests very few symptoms of toxæmia. Dr. Embelton will speak of this question and the value of "Lipiodol" injections in diagnosis. Then we have to consider whooping cough, measles and attacks of pneumonia as well as the rarer conditions of Hodgkin's disease, hydatid and malignant disease.

To help solve our problem, we send the child to the radiographer and frequently we get a report of "enlarged hilar and perihilar glands, with excessive fibrosis spreading far out towards the periphery, most probably tuberculous."

With such a report and our own clinical observations, are we now justified in labelling the child as tuberculous? Or are there any other refinements of the radiographer's art which can be brought to our aid? Can any further help be got from screening, from the taking of lateral views or the use of the stereoscopic films? McPhedran, of the Phipps Institute, holds that skiagrams taken during the diastole of the heart frequently reveal pathological changes in the lungs of children which would be overlooked by the usual methods.

One essential difficulty from the radiological standpoint seems to be the difficulty of establishing what is the appearance of the hilus shadow in the normal healthy child. This difficulty was well shown in an examination carried out by Hawes and Friedmann[5] of one hundred children of families whose children had been exposed to active tuberculosis. These children were examined by several different physicians and then sent for radiographic reports. In the summing up of results, it is stated:

> There is at the present time an amazing difference of opinion amongst radiologists themselves and between radiologists and clinicians as to the interpretation of X ray shadows of the hilus region in children. There is no unanimity of opinion as to what constitutes the normal or abnormal, tuberculous or non-tuberculous, active or inactive, old or recent. This is a most unsatisfactory state of affairs and should not be allowed to continue. The authors are of opinion that there is urgent need for further study of the effect of acute non-tuberculous respiratory tract infections upon the hilum gland tissues, both from the clinical and radiological aspects.

There are a few appearances in the films about which I should like to ask Dr. Hewlett and Dr. Macdonald for guidance, conditions which Dr. Campbell and I have come to regard as being in favour of a diagnosis of tuberculosis. One is that in addition to the hilum glands being enlarged the edge of the shadow is fuzzy and ill-defined. Another is the presence in the middle or outer lung zones of small bead-like shadows with a cotton wool outline. These shadows lie around the linear markings of the lung and are sometimes attached by fine interlacing lines. They give the lung a typical "ground glass" appearance and are quite different from the coarse fibrotic shadows such as we see after repeated attacks of bronchitis. Do these beads represent small tubercles, partly caseous and partly calcified and can anything else in a non-tuberculous being give this same appearance? Then, with regard to the question of calcification, is it in a large percentage of cases evidence that a tuberculous process is or has been present and does it indicate a good resistance on the part of the patient? There is one circumstance we have frequently noted which may mislead. And it is that if a radiograph be taken soon after a child has had a bad cold, there is a very pronounced increase in the linear markings and a picture taken a few weeks later will give quite a different appearance. We assume that increased vascularity explains this phenomenon.

Summary.

In the out-patient clinic and in practice we see a number of children, generally from about eight to twelve years of age, who have been repeatedly exposed to open tuberculosis and who have clinical signs and radiographic evidence of hilus gland enlargement. They are brought along with symptoms of a low grade toxæmia and they yield a von Pirquet reaction. No other cause can be found for the toxæmia.

Are we justified in giving our opinion that these children have tuberculosis and can the radiographers amplify the help they are already giving in helping us to a conclusion?

Personally, I think we can form an opinion only by reviewing all the factors—family history, exposure to infection, symptoms, signs and radiographer's report.

In several cases in which a radiological opinion of tuberculosis was given, I was unable to convince myself that the clinical data supported the diagnosis. Of all the planks in the platform of diagnosis, I would lay most stress on the history of exposure to infection, for I think this is the all-important feature. It has been estimated that in a family in which there is one member with active tuberculosis 67% of the other members of the family will develope the disease if they remain as contacts for a protracted period.[6] Whilst realizing that the control of the milk supply and the providing of milk free from tuberculous infection is very essential, the fact remains that the bulk of the infection with pulmonary tuberculosis in childhood is from the human bacillus. In Vienna where the milk supply is extremely well controlled pulmonary tuberculosis is probably more rife than in any other

city in the world, accounting for almost one-fifth of the total deaths. Furthermore, tuberculosis is very common in countries such as Japan, India, China and Turkey, where children are practically never fed on cow's milk.

I would regard any child with the history of repeated contact with open tuberculosis as being tuberculous until he is definitely shown not to be. The actual disappearance of the toxæmia is not sufficient. These children should be observed until adolescence is reached and their general health should be kept up to as high a level as possible. Watt, of the Derbyshire Sanatorium, has recorded several incidences of death from the adult type of tuberculosis occurring in young men whom he had seen as children with hilus tuberculosis some ten years previously.

It seems eminently desirable, then, that these children should be carefully looked after. It is a much more logical method of tackling the question of young adult tuberculosis than the alternative one of waiting until the more virulent adult infection manifests itself and then relying on sanatorium treatment.

References.

(1) C. H. Dunn and S. A. Cohen: "The Diagnosis and Prognosis of Tuberculosis in Infancy," *American Journal of Diseases of Children*, 1921, Volume XXI, page 187.
(2) Park and Krumeviede: Quoted by G. A. Davies in "Pediatrics," Volume XLI, page 200.
(3) A. Ghon: *"Ueber Sitz, Grosse und Form des primären Lungenherdes bei der Säuglings-und Kindertuberkulose," Virchow's Archiv für pathologische Anatomie .und physiologie und für klinische Medicin*, 1925, *Band* CCLIV, *Seite* 734.
(4) Furstwer, Risselada: Figures quoted by A. T. Bell in "Pulmonary Tuberculosis in Childhood," *Archives of Pediatrics*, February, 1925, page 89.
(5) J. B. Hawes and E. Friedman: "Bronchial Gland Tuberculosis: A Study Based on Children at the Prender gast Preventorium, Boston Tuberculosis Association," *Boston Medical and Surgical Journal*, 1925, Volume CXCII, page 954.
(6) H. G. Lampson: *Bulletin*, University of Minnesota, December, 1923.

CHRONIC CHEST CONDITIONS IN CHILDREN OTHER THAN TUBERCULOSIS.[1]

By D. M. EMBELTON, M.D. (Melbourne),
Honorary Physician to Out-Patients, Children's Hospital, Melbourne.

IN his address on tuberculosis in childhood, Rivière[1] writes:

> In infancy the shadows of disease fall on a comparatively clear surface, but in a child of ten or twelve years the radiogram often shows considerable and perhaps suspicious shadowings; how far due to silicosis, dust, carbon, measles, whooping cough and other fevers (which were held by an American Commission to thicken lung shadows) and how far due to healed tuberculosis in the apparently normal child, is a question that has much vexed the minds of investigators during recent years.

Lymphadenitis is constant in all inflammatory affections of the lung, acute and chronic; hilum tuberculosis has not got a monopoly of paravertebral dulness. Hodgkin's disease, gumma, sarcoma, chloroma, hypernephroma, enlarged thymus, hydatid, dermoid or abscess at the root of the lung all create mediastinal enlargement and present themselves for differential diagnosis.

Clinically their symptoms are primarily pressure symptoms, tracheal, bronchial, œsophageal, blood-vascular and nervous.

In malignant disease[2] pleural effusion is common, causing pressure thereby as a primary symptom. Splayed ends of rhachitic ribs also complicate the diagnosis. Various aids to diagnosis, such as a blood count, the Casoni test, the Wassermann test, glands and growths elsewhere assist in the diagnosis of these conditions which cause mediastinal enlargement. Chronic abscess may form a pulsating tumour difficult of diagnosis until it ruptures into the œsophagus or trachea or points as *empyema necessitas*. It may become inspissated.

By defining mediastinal enlargement, its extent and situation, its shape, its pulsation, its influence on relative[3] inspiratory and expiratory trans-illumination, mediastinal infiltration of the lung and deviation of the mediastinum itself, the radiologist supplies an enormous amount of helpful evidence to the clinician as an aid to diagnosis.

But when these affections are eliminated there still remains for differential diagnosis a large important group of non-tuberculous as well as tuberculous subacute or chronic thoracic affections. The earliest and commonest, bronchitis, may be innocent or dangerous. Acute inflammation of the bronchial tree results in active hyperæmia, exudation, vascular congestion of the mucous membrane and mucous secretion. The basement membrane is thrown into folds and becomes œdematous, ciliated columnar epithelium is gradually shed and the epithelial surface consists of round cells, many of which undergo mucoid degeneration and desquamate.[4] There is active glandular activity and secretion of mucus and serum in which cells are mixed. The bronchial muscular coat becomes impaired; lymphatic cellular infiltration may be traced inwards to the root of the lung. Bronchial glands are enlarged. Recovery from this condition is a process of growth and until new epithelium is, as it were, seasoned, it will be more sensitive to irritants and infection, which is manifested by tendency to relapse so characteristic of the disease. Recovery on each occasion may be less complete and chronic bronchitis with periods of better or worse is established. The parenchyma of the lung shows reaction to a variable degree, depending on the activity of the infection and its duration. Cecil and Blake showed that in acute infection inflammation of the lung parenchyma occurs long before catarrhal exudate into the alveoli or independent of it altogether and the same is doubtless true of subacute and chronic infection. The resultant cellular infiltration and lymphatic dilatation concentrating its drainage to the root of the lung, perhaps intensified, too, by vascular engorgement, gives rise to the appearance of fibrosis peribronchial or interstitial by lymphatic dilatation and reaction to

[1] Read at a meeting of the Melbourne Pædiatric Society on June 29, 1927.

lymphatic hilum enlargement. It also leads radiologically to the description, pulmonary fibrosis, and clinically in addition to moist sounds, paravertebral dulness varying in degree with exacerbations of disease. Associated with these changes we get patches of collapse and contingent emphysema both of which may recover or persist.

These pathological changes may be final or only the first steps in progressing disease. Cough, spasmodic and persistent, may cause distension of weakened tubes from within, aided perhaps by bronchial stenosis. Fibrifying atelectasis, collapse, interstitial or massive fibrosis of bronchopneumonic or even lobar pneumonic origin, pleurogenic fibrosis will create traction or stenosis of the bronchial lumen with consequent dilatation particularly if any of these are intensified by underlying syphilis. Bronchiectasis may be a congenital anomaly with failure of the lung tissue to develope. *Bronchiectasis universalis* is invariably unilateral, involving the whole bronchial tree; a lobe may be converted into a complete cyst or multiple cysts. Meyer and Grawitz show that it is present in the premature still-born or in the adult dying with cyanosis and dyspnœa at twenty-five years of age. We get all grades and sites of bronchial dilatation—cylindrical, fusiform or moniliform, central or peripheral, general throughout the lung. Following massive or local fibrosis confined to one bronchus or branch of it[5] a telangiectatic form due to dilatation of the terminal bronchioles with cavities up to one centimetre in size may be localized or scattered throughout both lungs, originating in multiple foci lined by bronchial epithelium or polygonal cells, suggesting in appearance bullous emphysema whereby spontaneous pneumothorax may occur. The rarity of this condition is, I feel sure, commensurate only with the difficulty in diagnosis.

Bronchiectasis may be progressive by fibrotic constriction and traction, creating saccular dilatation 1·25 centimetres (half an inch) or more in diameter, irregular in shape with dense fibrotic trabeculated walls partly or completely occupying a lobe usually at the base.

Hæmoptysis[4] [6] and periodic profuse expectoration fetid or otherwise may occur. Fetid expectoration is by no means a constant; this depends on the nature of the infecting organism. Repeated[7] febrile attacks with upper and lower respiratory exacerbations are the rule. A common history is one of bronchitis or whooping cough in infancy with repeated attacks of pneumonia during early childhood.

It not infrequently follows pneumonia with delayed convalescence. If the child has upper respiratory catarrh associated with the exacerbation, there is a risk of the condition being regarded as primary while even *otitis media* may be only secondary.

Despite gross chest involvement the child may thrive and seem periodically tolerably well. Development is often insidious and this process may go on for years ending in pneumonia by insufflation, gangrene, pneumothorax, empyema, amyloid disease. Radiologically these cavities may clearly show up, their outline depending on fluid level and infiltration of the parenchyma. Clinically and radiologically the condition may defy diagnosis depending on size of cavities, whether full or empty, the tissue reaction and their relation to the heart shadow. They may be confused with tuberculosis, chronic empyema and abscess of the lung. Chandler and Young[8] report a case of a girl twelve years old treated for over two years for tuberculosis and afterwards it was definitely established she was suffering from bronchiectasis and not tuberculosis.

Patients may live for years, but hitherto recovery from clinically well established infections has been impossible. Bronchiectasis[9] commencing as a disease of childhood, should be treated in early life. Early diagnosis, achieved by collaboration between radiologist and physician, is essential thereby anticipating the necessity for phrenic evulsion, pneumotomy, thoracoplasty and also necessity for utilizing bronchoscopic aspiration and artificial pneumothorax.

Sayer and Graham[10] found that in the absence of pleural adhesions the upper lobe would take the place of the permanently collapsed fibroid lower lobe. Clear definition of the bronchial tree is best achieved by instillation of opaque substance. Bismuth subcarbonate, dry or a 20% suspension in oil, has been used and is still preferred when bronchoscopically applied by Manges, of Philadelphia. Upon alimentary experience of bismuth it is suggested inspissation may be an unhappy sequel.

"Lipiodol" is almost universally in favour: a 40% iodine in poppy oil, it was in use twenty-five years ago for intramuscular injection and was ressurected in 1921 by Forrester for diagnosis of tumor of the spinal cord. A 30% solution of iodine in oil of sesame is alleged to be just as useful (Landau). Methods of instillation for adults are:

1. Under cocaine applied to the pharynx and larynx with a long necked syringe. "Lipiodol" is instilled into the larynx with or without a laryngeal mirror.
2. By weighted catheter through the larynx.
3. Bronchoscopically.
4. By a trocar through the crico-thyreoid membrane.

Method number 1 is not applicable to children.

In method number 2 the catheter is coughed and vomited and worked out of position by the muscles of the pharynx and tongue.

Method number 3 is technically difficult when a bronchoscope is available and requires general anæsthesia.

Method number 4 is mutilating and does not easily admit of repetition.

At the Children's Hospital we have found the most satisfactory method is to attach a gum elastic catheter by rubber band to the lower end of a suitable intubation tube. The catheter should be not less than one millimetre bore.

The child is intubated under momentary anæsthesia and so long as the arms are charted the "Lipiodol" can be deliberately injected, when the child wakes up.

Ten to fifteen cubic centimetres are instilled and films immediately taken. Only once have slight symptoms of iodism occurred. Reaction in the chest mostly subsides in forty-eight hours. Most of the "Lipiodol" is coughed up, but it may remain *in situ* for two months.

I speak with no sense of authority on the use of this means of diagnosis, but with the knowledge that upwards of a score of injections of ten to fifteen cubic centimetres in children has done no harm, has therapeutically seemed to do good and undoubtedly will aid materially in the diagnosis of bronchiectasis, emphysema and other allied conditions.

Abscess of the lung may become subacute or chronic and therefore becomes involved in our discussion. Acute infections of the lung involve the parenchyma of the lung and resulting abscess and gangrene may occur with or without preliminary pneumonic consolidation (Cecil and Blake[12]).

This infection may become subacute or chronic. Abscess is distinct from bronchiectasis, being a collection of pus within the destroyed parenchyma of the lung outside the respiratory tree. Bronchiectasis may coincidently be present. The pneumococcus uncomplicated by secondary invader[13] is a rare cause of abscess. General anæsthesia with insufflation of pharyngeal contents is an important cause. Lord[14] analysed 227 cases of abscess and found 42% were post-operative and 22% of the total followed tonsillectomy. F. C. Ballon[7] analysed 94 cases; 20% followed operation of the nose and throat. Wassler[14] analysed 100 cases; 21% were due to tonsillectomy. Lemon[15] asserts that ether anæsthesia causes no complications. All pulmonary complications are due to aspiration from the pharynx. Holscher[15] showed with dogs and guinea pigs, using gentian violet in the pharynx, that after anæsthesia the dye was found in 50% in the smallest bronchi, in 25% in the larynx and trachea and in 25% about the larynx. Cutter and Hunt[15] assert that 2% of all general anæsthetics produce pulmonary complications. One hundred and forty-eight cases of abscess were analysed at Bellevue Hospital; 50% were clinically and radiologically demonstrable.

In pulmonary abscess[5] in the newborn, ten out of twelve were associated with sepsis in the mother. Two of every three pulmonary abscesses are in the lower lobe.[5]

Foci of suppuration may coalesce to form one abscess (Chickering and Park).

They may dry in and, having destroyed lung parenchyma, create diffuse fibrosis. The degree of pulmonary infiltration associated with abscess influences clinical and radiological diagnosis. Subpleural or peripheral abscess with definite pleural rupture may create empyema and obscure the diagnosis. Abscess in children is often latent. Absence of expectoration makes diagnosis more difficult.

In Ballon's[7] series of ninety-four patients five were under five years and seven were under ten years of age. Signs of cavitation are not common. Fluid level is present in only one in fifteen cases. It is more commonly peripheral and does better surgically because it is more easily approachable. Abscess of the upper does better than abscess of the lower lobe. Appearance of elastic material in the sputum is strong presumptive evidence of abscess in the absence of tubercle bacilli.

Abscess may be small or large encroaching on large bronchial tubes and rupturing into several. Dual bronchial and pleural rupture may occur. Bronchial drainage and recovery may be complete or incomplete with further abscess extension. The latter course is the usual one. Bronchial fistulæ in empyemata are produced by dual rupture of original lung abscess. Hartwell reports a case beginning as a primary *Staphylococcus aureus* pneumonia with expectoration of pus on the thirteenth day, a large quantity on the thirty-fifth day and recovery without operation on the ninety-second day. Also, a soldier was operated on for tonsillectomy in September and empyema and pulmonary abscess were evacuated the following March.

The difficulty in diagnosis and precise location of pulmonary abscess is obvious, particularly when associated with a wide area of lung infiltration, pleural thickening and empyema.

The course, clinical history and examination are often more helpful than radiology.

"Lipiodol" is of limited use, though it will define abscess with free opening into a bronchus. Usually it stops short at the area of lung involvement. In most cases of abscess the opening into the bronchus is not permanently free. Fluid level and signs of cavitation are in consequence not common. Bronchoscopic examination and instillation are possible where other methods fail. To define whether the abscess is anterior or posterior to the bronchial tree is helpful and important. Bronchiectasis is frequently associated with abscess. External opening into the bronchial tree is shortly followed by bronchiectasis and subsequently thereby drainage of obscure abscess.

Interlobar empyema may be mentioned in association with abscess clinically and radiologically, creating a band across the chest which is resonant and translucent above and below. Sometimes it evacuates itself through a bronchus. Thickened pleura may cloud the pulmonary markings. Fluid in the pleural cavity may be loculated, anterior or posterior. Usually it has an ⌣ shaped upper limit highest in the axilla, but dulness usually appears first at the base. The axillary portion, first noted, is the last to disappear. The heart may be dislocated, likewise the mediastinum. Pleural adhesions may prevent pulmonary collapse. Encapsulated fluid may simulate consolidation or lung abscess. With hydatid, primary sarcoma, cystadenoma and other conditions I do not now find time to deal.

Conclusions.

In conclusion I view the matter of diagnosis of chest conditions as difficult, but by no means stationary. At fourteen years of age 90% of children are infected with tuberculosis, but between five and fifteen years children contribute only 3% of the deaths from tuberculosis. What we are always anxious to discover is how much a child is

suffering from tuberculosis and how much from bronchitis and its sequelæ.

I suggest that we approach the question at first by making a united endeavour to learn to diagnose bronchitis, its sequelæ and the extent of its pathological changes. These will be the key to the greater part of pulmonary radiology in children.

References.

(1) Clive Rivière: "Tuberculosis in Childhood," The *British Medical Journal*, August 30, 1924, page 359.
(2) L. S. T. Burrell: "The Diagnosis and Treatment of Iutrathoracic New Growths," *The Lancet*, February 27, 1926, page 435.
(3) David Lawson: "Value of X Rays in Diagnosis of Diseases of the Lung and Pleura," *The Practitioner*, February, 1926, page 132.
(4) S. West: "Diseases of Organs of Respiration," Volume II.
(5) Abt: "System of Medicine," Volume IV, page 48.
(6) William Osler: "Modern Medicine, Its Theory and Practice."
(7) H. C. Ballon: "Value of Lipiodol in Diagnosis and Treatment of Lung Abscess," *Surgery, Gynecology and Obstetrics*, January, 1927, page 1.
(8) F. G. Chandler and J. M. Young: "Lipiodol in Pulmonary Tuberculosis: Its Uses and Limitations," *The British Medical Journal*, February 5, 1927, page 228.
(9) Discussion on Bronchiectasis in *The British Medical Journal*, November 27, 1926, page 992.
(10) J. J. Sayer and E. A. Graham: "Roentgen Ray Study of Bronchiectasis," *American Journal of Roentgenology*, January 1926, page 54.
(11) A. H. Pirie: "Diseases of the Chest Demonstrated by Lipiodol," *American Journal of Roentgenology*, December, 1926, page 553.
(12) John A. Hartwell: "Abscess of the Lung," *Annals of Surgery*, September, 1920, page 333.
(13) Carl Eggers: "Lung Abscess and Hidden Empyæma," *Archives of Surgery*, 1919.
(14) *The Medical Annual*, 1926.
(15) W. S. Lemon: "Aspiration," *Archives of Surgery*, 1926, page 187.

STERILITY IN WOMEN.[1]

By CECIL COGHLAN, M.B. (Sydney), F.R.C.S. (England), M.R.C.P. (Ireland), D.G.O. (Dublin), L.M. (Rotunda).
Honorary Anæsthetist, Women's Hospital, Sydney.

THE study and treatment of sterility has of recent years been of greater interest to the medical profession owing to the more or less recent discoveries which shed light on the true physiology of the female genital organs. There still exists, especially in the lay mind, the idea that the female partner is the one to blame for the unfruitfulness of a marriage. The male, particularly if he is potent, deems it almost an insult if the suggestion is made that the cause may be with him. No inquiry into a sterile marriage is complete unless the male is examined and he is found to be the cause in at least from 15% to 20% of cases.

Reliable statistics as to the sterility rate in a community I have found difficult to obtain from the literature and most of those that are published relate to small sections only. Through the courtesy of the Commonwealth and the New South Wales Government Statisticians and Dr. Dick, of the Board of Health, however, I have been able to obtain some interesting figures concerning sterility and fertility rates. These are mostly from the Commonwealth census returns, but some are from the Statistical Review of England and Wales for 1922.

The sterility rates of the Commonwealth of Australia are shown in Table I. This is compiled from the census of 1911. In 1921 the information required was not asked for in the census. The number of wives considered in this Table is 693,055. The total number of married women in Australia at the time was 717,953, but 24,898 failed to supply the necessary information.

TABLE I.

Duration of Marriage.	Number of Wives.	No Issue.	Percentage.
0 to 4 years	140,011	51,466	36·03
5 to 9 years	128,142	16,413	12·81
10 to 14 years	107,300	12,230	10·47
All wives 5 years and longer	553,044	47,965	8·67
All wives 10 years and longer	424,902	31,522	7·42

In 1921, when the number of married women had increased to 1,001,383, only 295 first children were born to mothers married ten years or longer. These with the interval between marriage and their birth and the ages of their mothers are set out in Table II.

There is thus approximately a 0·06% chance of a first child being born to a couple married ten years, and for practical purposes we might consider the sterility rate of the last group of wives as the sterility rate of the community.

Is the sterility rate increasing and a factor in the decline of the birth rate?

Table III shows the birth rate figures of various countries during the last 40 years.

In considering the birth rate figures, we have firstly to realise that the decline is not nearly so great as it appears. The rate is obtained by taking the number of births and comparing this with the number living of all ages and both sexes. These figures are then reduced so that the latter figure equals a thousand. Let us consider the composition of this thousand of general population. Are they the same age distribution for the later figures as the earlier?

Let us consider firstly the death rate. In Australia in 1875 it was 19·67 and in 1925 it was only 9·20 with a regular decline between these dates. This reduction in the death rate has had the effect on the expectation of life at birth as shown in Table IV.

In the case of females the increase is nearly 26% The result is that a large number of people of unreproductive age have been added to the community with a consequent lowering of the nominal birth-rate.

It is generally thought that marriage is entered into at a later age now than formerly. If this were so, it certainly would affect the birth rate, for the fertility of women decreases as age advances. This is shown in Table V(1) for England and Wales as far as legitimate births for 1921 are concerned.

[1] Read at a meeting of the Section of Gynæcology and Obstetrics of the New South Wales Branch of the British Medical Association on March 16, 1927.

TABLE II.

Age of Mother at Birth of Child.	Interval in Years Between Marriage and First Birth.													
	10	11	12	13	14	15	16	17	18	19	20	21	22	23
26 years	..	2	..	..	..	..	..	..	..	..	..	..	..	..
27 years	2	..	1	..	..	..	..	..	..	..	..	..	..	..
28 years	2	2	2	..	..	..	..	..	..	..	..	..	..	..
29 years	8	1	..	..	..	..	..	..	..	..	..	..	..	..
30 years	6	3	3	..	..	..	..	..	..	..	..	..	..	..
31 years	6	1	1	2	..	..	..	..	..	..	..	..	..	..
32 years	12	5	1	3	1	..	..	..	..	..	..	..	..	..
33 years	8	3	5	2	2	..	..	..	..	..	..	..	..	..
34 years	14	3	7	2	2	1	..	..	..	..	..	..	..	..
35 years	8	9	5	3	1	1	..	..	..	1	..	..	..	..
36 years	6	9	7	..	1	3	1	1	..	..	..	..	..	..
37 years	9	3	4	4	5	2	2	1	..	2	..	..	..	..
38 years	8	3	8	2	4	2	1	1	3	..	..	..	..	..
39 years	5	6	2	3	3	1	2	..	..	1	..	..	..	..
40 years	2	1	2	1	1	1	1	..	..	1	..	..	..	..
41 years	3	2	1	1	..	2	1	..	1	1	..	1	..	..
42 years	..	1	1	..	..	1	1	..	..	1	..	..	1	1
43 years	..	..	..	..	1	..	..	1	..	..	1	..	..	..
44 years	..	..	..	..	1	1	..	..	..	..	..	..	..	1
45 years	1	..	..	..	..	..	1	..	..	..	..	..	..	..
46 years	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Total	100	54	50	23	22	15	10	4	4	7	2	1	1	2

Thus below the age of twenty the chance of a married woman having a surviving child within a year is shown to be nearly 50%, between 25 and 29 it is only 25%, ten years later it is only 13%, whilst in the last group it is only 3%. However, the average age of brides has hardly varied and is shown in Table VI.

I have been unable to obtain any figures to show any variation in the sterility rate, but compared with other published figures which vary from 8% to 20% with an average of about 12%, the Australian figure 7·42% is low and we may conclude that it has had little effect, either way on the birth rate.

Sterility may be classified as:

1. Primary.—In this class are included all congenital and developmental defects in the genital organs, and acquired conditions occurring in nulliparous women.
2. Secondary or relative, due to acquired conditions in women who have born children.
3. Functional, due to sexual incompatibility, vaginismus, *et cetera.*

PRIMARY STERILITY.

Congenital defects such as absence of the vagina, uterus, tubes or ovaries are cases of absolute sterility. Here I might mention that the male pseudo-hermaphrodite is generally considered to be a girl at birth and brought up as such. Some have even been "happily" married, taking the rôle of the female partner. Lesser congenital defects are frequently compatible with childbearing, but are often associated with hypoplasia, of which more later.

TABLE IV.—SHOWING EXPECTATION OF LIFE.

Period of Years.	Males.	Females.
1881-1890 ..	47·199 years	50·344 years
1920-1922 ..	59·148 years	63·311 years

Backward displacement as a cause of primary sterility I consider receives too much attention. A fair percentage of girls, estimated about 20%, have this condition. It causes them no trouble as a rule and on marriage they bear children within a reasonable time. If on investigation this condition is found, do not immediately conclude that it is the cause of the sterility. Certainly the uterus in this position is at a mechanical disadvantage, the cervix points forwards and the posterior fornix, the *receptaculum seminis,* is flattened out, consequently there is no seminal pool into which the cervix dips, but the sperm is an active little fellow and, provided conditions are otherwise normal, he will find no

TABLE III.

Period.	Country.									
	England and Wales.	Scotland.	Ireland.	Switzerland.	Austria.	Prussia.	France.	Italy.	Australia.	New Zealand.
1881 to 1895	33·5	33·3	23·9	28·9	38·5	37·4	24·7	37·8	35·2	36·3
1886 to 1890	31·4	31·4	22·8	27·7	38·1	37·3	23·0	37·2	35·2	31·2
1891 to 1895	30·5	30·5	23·0	27·8	41·0	37·0	22·4	35·9	32·4	27·7
1896 to 1900	29·3	30·0	23·3	28·6	36·7	36·5	21·9	34·0	27·7	25·7
1901 to 1905	28·2	28·9	23·1	27·8	35·7	34·8	21·2	32·6	26·4	26·6
1906 to 1910	26·3	27·6	23·4	26·0	33·7	32·3	19·9	32·7	26·7	27·1
1911 to 1915	23·6	25·4	22·7	22·7	30·8	27·0	17·4	31·2	27·8	26·0
1916 to 1920	20·1	22·8	20·5	19·2	..	18·2	13·2	22·5	25·3	24·3

TABLE V.

Age Last Birthday.	Births per 1,000 Wives of Age Group.
15	447
20	359
25	268
30	197
35	131
40-45	32

trouble in entering the *os*. I strongly deprecate any interference with this condition by ring or operation until all other possibilities are excluded and the patient allowed a long period of trial. It must not be thought that the remarks I have just made apply to acquired displacements.

TABLE VI.—SHOWING AVERAGE AGE OF BRIDES.

Year.	England.	Australia.
1896-1900	26·21	—
1901-1905	26·36	—
1906-1910	26·59	25·70
1911-1915	26·77	25·92
1916-1920	27·14	26·07
1921-1925	26·72[1]	25·76

[1] 1921-1922 only.

Inflammatory Conditions.

Inflammatory conditions play an important part in the ætiology of primary sterility and gonorrhœal infection is by far the most serious.

Gonorrhœa may cause sterility from Bartholin's abscesses, with resultant dyspareunia; from endocervicitis; from salpingitis, with sealing of the tubes; from perioophoritis and ovarian abscess. The tubes are involved in pneumococcal and tuberculous peritonitis and become sealed. Strangely tuberculosis of the ovary is extremely rare. Measles, mumps and scarlet fever may cause a slight peri- and endosalpingitis with filmy adhesions around the tubal ostia.

Hypoplasia.

Failure of the genitalia to develope from the infantile to the full adult type is referred to as hypoplasia. The Müllerian ducts which form the female genital tract, fuse at their lower end and open into the caudal part of the uro-genital sinus. The upper unfused parts form the Fallopian tubes. the lower fused portion becomes the uterus and vagina. The urogenital sinus is at first deep and into it just anterior to the opening of the fused Müllerian ducts the urethra also opens. As development proceeds, the urogenital sinus becomes shallower by an "opening out" process, the ureter and vagina thus coming to the surface. In hypoplastic conditions it may frequently be noticed that the vestibule is deep and the urethral opening not so superficially placed as normally. The hymen, too, is high and the perineum short with its muscles ill-developed; it is frequently concave instead of being prominent and convex. The infant's uterus is composed mostly of fibrous tissue and the cervix is longer than the body and conical in shape. The tubes too are long, three times the length of the uterus and are convoluted; they are in fact longer actually than the tubes of an adult woman which are of the same length as the uterus and are not convoluted. The infant's ovary is elongated and round in section, that of the adult short oval with oval or flat section. In genital hypoplasias these infantile conditions more or less persist. There is usually some abnormality in the hair distribution, but I am referring to this again in the section dealing with endocrine dysfunction which is always present to a greater or lesser degree in this condition.

There are two characteristic types of hypoplastic sterile women, one the large individual with a tendency to fat accumulation and showing nothing externally to suggest a genital hypoplasia, the other thin with long neck, long thin thorax, general lack of muscular development, narrow hips, slender thighs and undeveloped breasts. When young, this latter type has a fine skin and complexion, is pretty and sought in marriage, but later developes into the typical "old maid" type. Both types have an unstable nervous system and suffer with dysmenorrhœa which is an important factor in the ætiology of the nervous symptoms.

The cause of hypoplasia is problematical. Heredity may play a part and there is no doubt that parental syphilis, alcoholism and consanguinity are sometimes responsible. Premature birth, lack of nourishment during infancy, severe illness, rickets, tuberculosis. *et cetera*, may all play their part. Some cases one must consider not as a genital, but part of a general hyperplasia.

The acute anteflexed (cochleate) uterus is a fairly common example of the hypoplastic type and should not be considered a displacement. This type of uterus is normally found before puberty. Its structure shows an excess of fibrous tissue.

Sterility due to Glandular (Endocrine) Dysfunction.

Dysfunction of the ductless glands is one of the most important causes of sterility. Dysfunction of one gland has its effect in causing a disturbance in function in the other members of the system. I think that I can best deal with this section by considering the glands separately.

The Thyreoid Gland.

Cretinism is not, as one would think, a condition always associated with sterility. In Austria I saw quite a number of pregnant cretins. In regions where goître is not endemic, however, cretins are usually sterile.

Myxœdema, though at first associated with over-action of the ovaries and severe menorrhagia, is followed sooner or later by amenorrhœa and sterility. Graves's disease is usually associated with amenorrhœa and sterility. The thyreoid enlarges before menstruation and during pregnancy when the action of the ovary is in abeyance. Broadly one can consider that the thyreoid is complementry to the ovary, but that the ovary needs a sufficiency of thyreoid, yet not too much, for its normal functioning.

The Pituitary Gland.

Sexual activity and development are depressed or lost in all forms of pituitary disease except sometimes in hyperfunction of the anterior lobe in early cases. I recently had in the Women's Hospital a patient with acromegaly who was delivered of a full time normal child. She had however before conception no sexual desire or feeling and her periods were irregular and scanty. Gordon Holmes[2] reports a pregnancy in a patient with acromegaly so far advanced that a severe degree of blindness existed and also a case of a woman with definite physical signs, blindness in one eye and temporal hemianopsia in the other, who had menstruated normally and regularly since the onset of symptoms five years previously. The *pars intermedia* and the posterior lobe control the development of the sexual organs. The pituitary gland enlarges in castrated animals and during pregnancy. The enlargement is permanent. Werner in Vienna gave small "stimulating" doses of X rays to the pituitary in hypoplasia, and demonstrated some "successes." He used undifferentiated rays. By using the rays of such wave length as Moppett[3] has recently shown to produce stimulating effects on tissues, we might get more certain effects, for the pituitary is more definite in position and more accessible to the rays than the ovaries are.

The state of the sexual organs in pituitary disease varies with the age at which symptoms commence. If the disease appears before puberty the external genitalia, uterus, tubes and ovaries remain undeveloped and infantile, with no evidence of puberty with the development of the secondary sexual characteristics. If it starts after puberty, the organs usually atrophy, with loss of sexual feeling and in the male of potency. The breasts in most cases do not develope or else atrophy, but in Fröhlich's syndrome (*dystrophia adiposo genitalis*) they may appear well developed from fat deposit, but contain no glandular tissue; in this condition too fat is deposited on the abdomen, pubes, buttocks and the upper and outer parts of the thighs.

In pituitary dysfunctions the hair distribution is often an important point in diagnosis. In the hyperpituitary conditions it is excessive and of the male type in distribution, plentiful on the limbs, in the axillæ, and the pubic hair extends upwards to the umbilicus. In hypopituitary conditions it is scanty and the pubic hair may be absent; the hair of the head, however, is normal in amount, but fine and dry. Thus the genital organs require a sufficiency only of pituitary secretion for their proper functioning and development.

Thymus, Parathyreoid and Pineal Glands.

The functions of the thymus, parathyreoid and pineal glands and their action on the development and control of the sexual organs is not completely understood so I will pass them by, merely mentioning that in *status thymolymphaticus*, where the thymus persists, the sexual organs are small and function feebly, while in tumours of the pineal gland, usually gliomas, which destroy the gland substance, precocious sexual development and function are found. The rôle of these two glands thus seems to be to check the development of the sexual organs and delay puberty.

Suprarenal Glands.

The suprarenal glands have been noticed to be small in hypoplastic individuals and large in strongly sexual races such as Negroes. Hypernephromas in children produce precocious sexual development. There is an abnormal development of certain primary and secondary sexual characters such as the external genitals, pubic hair and bodily form, without functional symptoms such as menstruation. In females the development of the clitoris may be so great as to produce female pseudohermaphroditism.

The Pancreas.

Whether as the result of the impaired nutrition of the tissues or through lack of the physiological stimulus of the pancreatic hormone, diabetes gives rise to a functional disturbance of ovulation and in long standing cases to atrophic and sclerotic changes in the ovaries and the uterus. Associated with these changes, there may be sterility, disturbances of menstruation, sexual frigidity and in some cases obesity.

Menstruation is absent in about 50% of diabetics and disturbed in 65%.

Not more than 5% of diabetic women become pregnant. Though conception is less frequent in the more severe cases, the incidence of sterility runs parallel with the chronicity of the disease rather than with its severity.

Reports are already available which indicate that the treatment of diabetes with "Insulin" may in some cases restore the reproductive functions.[4]

The Ovary.

The ovaries at birth are said to contain about 40,000 primordial ova. No more are formed during life. These ova become surrounded by a layer of cubical cells which form the granulosa. From these are eventually formed the primary follicles. Later a follicle matures and ovulation occurs; the first ovulation is puberty. A ripening follicle prevents the development of others. During life only 350 to 400 follicles ripen and set free their contained ova, the rest atrophy. During the early part of pregnancy there is complete inhibition of follicle development owing to the *corpus luteum* of pregnancy; this degenerates at about the twenty-eighth week and the first developing follicle in the female child occurs at the same time and from now to puberty one or two follicles are always growing, but the ovum dies and the follicle atrophies. It is from these atresic follicles that the prepuberty stimulus to growth and development is said to arise. When a follicle matures and ruptures, setting free the ovum, the *corpus luteum* is formed, this stimulates the pregravid development of the endometrium. The ovum lives for eight to ten days and with its death the *corpus luteum* atrophies, the growth of the endometrium ceases and it is cast off with menstruation. If the *corpus luteum* persists from some pathological cause, such as a lutein cyst, sterility occurs, as no

follicles can ripen. Under the influence of inflammation several follicles may ripen together, but none matures, the ovum dies and they become cystic; inflammation also thickens the ovarian tunic which prevents the rupture of the follicle and freeing of the ovum. With the advent of endocrine medication a number of more or less worthless "ovarian" extracts were put on the market and extravagant claims were made for them. The absolute failure of most of them put ovarian therapy into disrepute. There can be obtained from the ovary two lipoidal substances, one soluble in chloroform, luteo-lipoid which stops or lessens menstruation, and another soluble in water, lipamine, which stimulates menstruation and in laboratory animals produces premature sexual maturity[5]. These two extracts have recently been placed on the local market by a Swiss firm.

Relative (Secondary) Sterility.

One of the commonest causes of relative sterility is uterine fibroids. Mosher[6] states that 25% of women with fibroids are sterile. These tumours may cause primary sterility, but are most frequently associated with a "one child sterility." Are fibroids the cause or the result of sterility? Are they the degeneration of an organ deprived of its function? These questions must at present remain unanswered. I think that the sterility associated with fibroids may be due to something more than the mere local effects produced by the presence of the tumours in the uterus. In patients brought to operation we notice that the ovaries are large and "purse like" or else sclerotic and on section they show an increase in fibrous interstitial tissue. Thus arises the question, "Are the fibroids secondary to a chronic interstitial oophoritis and is the resulting sterility due to the sclerosis of the ovaries?"

Infection.

Infection again is a potent factor in this group and in addition to gonorrhœa we get puerperal infection. Endocervicitis, the result of laceration and infection, causes sterility as the consequent discharge forms an unfavourable medium for the sperm and also forms a plug in the cervix delaying its passage. Clinically we notice that some women, mostly of the working class, can have a severe amount of leucorrhœa, cervical infection, *et cetera* and yet become pregnant with the greatest ease, yet the more refined types of women with the same degree of infection, *et cetera*, are quite unable to conceive. Leucorrhœa, alkaline vaginal discharges, unhealthy cervical secretion, *et cetera*, are all inimicable to the sperm and it is probable that the stronger and more active sperm of the working man survives, whilst the less active sperm of the man with a sedentary occupation falls by the way.

Retrodisplacement of the Uterus.

Retrodisplacements of the uterus in this group are usually secondary, and are associated with lacerations, pelvic congestion *et cetera*. Thus the need for replacement is greater than in primary sterility.

Ovarian Deficiency.

Ovarian deficiency is usually temporary and due to ill-health, debility or lactation. There is a profuse, white, alkaline discharge and if the surface of the vagina is examined small bluish "ulcerations" may be noticed. During lactation the uterus and ovaries actually atrophy and if lactation be persisted with too long, the atrophy may be permanent.

Functional Sterility.

Vaginismus and tubal isthmiospasm I will just mention. A very rare cause must be ignorance of the full and proper performance of the sexual act. Recently I attended a woman for sterility who had been married for six years, but still had an intact hymen. On questioning her and her husband I formed the conclusion that the sexual act had never been properly performed.

A certain number of sterile marriages are due to sexual incompatibility of the partners. Reynolds and Macomber[7] mated a number of rats and 65% of these matings were fertile. On remating the unproductive rats with those of proved fertility, it was found that frequently both partners to a sterile mating proved to be fertile. The most famous example in history of this was the marriage of Napoleon and Josephine. The latter had two children by her former marriage. Napoleon in his second marriage had a son.

The so called "idiopathic" sterility is of passing interest. The typical case is one where two young people have been indulging in excessive sexual intercourse using a contraceptive such as the soluble quinine pessary. On discontinuing its use conception does not occur, but readily does so on their resuming relations after being separated for two or three months. Several theories are advanced to explain this condition, the two most favoured being, (i) pelvic congestion as a result of the sexual excess; (ii) immunization of the female to the sperm as the result of the formation of a spermatotoxin or other type of antibody. Various experiments performed to confirm this latter theory are inconclusive.

Other causes of sterility which may be mentioned are consanguinity and the mating of widely different races. Gölherts according to Graves[8] states that 33% of consanguineous marriages are sterile, while N. Walker[9] states:

> The Mulatto is less fertile than the pure white or black, whilst the octoroon is almost infertile. One finds too that sterility is rather common in Jewish-Gentile marriages and marriages by the blue-eyed Teuton or Celts with the dark eyed Mediterranean races.

Hardly within the scope of this paper are the cases of repeated early abortions, but still they are counted in the sterility statistics. With regard to them I will mention that a healthy embryo goes to term, an unhealthy one may not survive and abortion occurs. We must not overlook the fact that the health of the embryo depends as much on the healthiness and vitality of the father's sperm as on the mother's ovum.

THE INVESTIGATION OF A CASE.

We must never conclude that the cause of a sterile marriage lies in the woman who consults us for that reason. In every case it is necessary to examine the male partner. Usually the examination of a fresh condom specimen of his semen is sufficient. In the woman it is necessary to take a careful history of her mode of life, her previous and present health and to make a thorough general and pelvic examination. This being accomplished, if no obvious reason is discovered, we should then investigate the patency of the Fallopian tubes. Rubin[10] was the first to bring this examination to a simple and harmless procedure, if obvious precautions are taken. Rubin's apparatus was cumbersome, but it has now been considerably simplified. When working with Mr. Forsdike at the Hospital for Women, Soho Square, London, I had the good fortune to assist him in his investigation of the uterus and Fallopian tubes by air and opaque bodies in sterility.[11] Mr. Forsdike's apparatus consisted of a Number 6 Hegar's dilator from which the top had been cut to make a hollow tube. To this he attached a reservoir air bellows and manometer. In his cases he ordered glycerine tampons to be placed in the vagina for two days before the day of the investigation. This procedure has the effect of softening the cervix and rendering its necessary dilatation easy and painless. The patient is placed in a low Trendelenburg position and after dilatation of the cervix with Numbers 4, 5, and 6 Hegar's dilators the special uterine tube is passed and is firmly gripped by the cervical musculature. The vagina is now partially filled with water to indicate any back leak of the air. The pressure in the reservoir bellows is raised to 160 millimetres of mercury and if one or both tubes are patent (the valves in the bellows not leaking), the manometer pressure gradually falls. At the same time by listening with a stethoscope a short distance above the centre of Poupart's ligament on either side, the air can be heard bubbling through the tubes into the peritoneal cavity. As soon as this is determined, the uterine tube is withdrawn and the entry of air into the peritoneal cavity can be verified by percussion, a tympanitic area can be detected above the *symphysis pubis*. The patient is allowed to rest in the recumbent position for twenty minutes and is then permitted to go home. The after effects are usually nothing beyond a slight pain in the right shoulder, due to the unabsorbed bubble of air rising to below the diaphragm when the patient sits up. This pain lasts for several hours and patients should be warned of it. Further information can be gained, whether the tubes are open or otherwise, by the injection of "Lipiodol" through the intrauterine tube and then taking skiagrams, preferably stereoscopic, of the pelvic region, but this must not be done on the same day as the air investigation. I have modified Mr. Forsdike's apparatus slightly. My intrauterine catheter is tapered from a Number 6 Hegar to a Number 3 at the tip and I find that I can insert it without previously diluting the cervix (see accompanying figure). Recently I have added another modification, namely a tap at the junction of the bellows and catheter. I attach the bellows to the catheter with the tap closed and raise the pressure to 180 millimetres of mercury. On opening the tap there is at first a rapid but slight drop in the pressure, followed by a gentle fall if the tubes are open. As soon as this is noticed the tap is closed. The result is then checked by auscultation, the tap being again opened when the stethoscope is in position. In this way a minimum of air is admitted and since using it I have not had a complaint of shoulder pain.

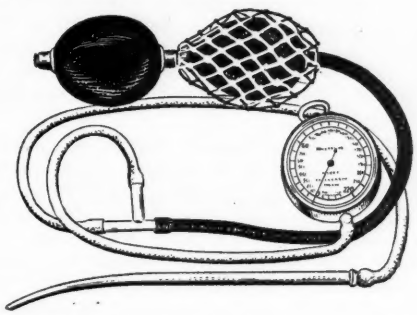

Figure Showing the Author's Modification of Forsdike's Apparatus.

TREATMENT.

Most operative procedures are of little avail. Plastic operations on the tubes are useless, except perhaps when there are slight adhesions at the abdominal ostium. These can be separated and the tube sewn over the ovary or not as the surgeon may determine from the conditions present. In one such case I have seen an ectopic pregnancy result. Operations on the acute anteflexed uterus, such as Dudley's operation, I can only condemn. They do not cure the condition which as I have previously mentioned, is an hypoplastic one and is often associated with hyperpituitarism and frequently determine the sterility, causing a profuse leucorrhœa owing to the ectropion of the cervical mucosa produced and this leucorrhœa is both distressing to the patient and a bad medium for the sperm. Solomons,[12] of Dublin, has recently reported a case of carcinoma of the cervix in a *nullipara* following upon a Dudley operation. Reported cures after this operation were probably due to the dilatation and this procedure alone frequently relieves symptoms and results in conception. Curettage, except in the cases associated with an hypertrophied endometrium, is unnecessary and too vigorous use of the curette will result only in a scarred and fibrous lining to the uterus. Enucleation of fibroids from the body of the uterus, the repair of a diseased and damaged cervix and replacement of the pelvic structures in women who have borne children, often result in conception.

With regard to medical treatment, attention to the general health and diet are essential; we should see that this is applied to both partners and that the diet contains the necessary quantities of vitamins. No medical therapy is definitely able to influence ovarian function. The cases of amenorrhœa and sterility that occurred in Central Europe dur-

ing the war were due to the lack of proper food and sufficient vitamins. Professor O. Frankel, of Vienna, informed me that very good results were obtained in these cases by injecting an extract of the anterior lobe of the pituitary gland.

Evans and Bishop[13] have shown that if rats are fed on a basic diet, adequate for normal growth and health, the animals fail to reproduce. The diet used by them consisted of a casein-lard-cornstarch mixture. The sterility produced does not interfere with the early steps of gestation. The ovulation and implantation incidence are normal, but the implantations are resorbed. Certain foods, such as greens, meat, whole wheat *et cetera* can protect against this sterility. They refer to this unknown food factor as "factor X," since it does not correspond with the known vitamins.

Thyreoid gland extract is our sheet anchor in hypoplastic cases and if administered early frequently works wonders. Ovarian extracts as usually prepared and marketed are useless, but with the water-soluble lipoidal substance which can now be obtained in the local market under the name of "Agomensin" I have had some promising results, but not sufficient as yet to say anything definite. In ovarian hypoplasias one might think that ovarian grafting would be of use, but this has been tried with disappointing results.[14]

Artificial impregnation (insemination) has been very successful in the breeding of domestic animals, but is rarely practised in human beings. Its greatest use is in cases of functional sterility (vaginismus *et cetera*).

Conclusion.

This subject is a big one and I have tried to cover a considerable amount of ground in the time at my disposal. On many things I would have liked to have spoken more fully and many things I have omitted, but what I have said I hope you will accept in its incompleteness.

References.

(1) "Statistical Review of England and Wales," 1922, page 138.

(2) Gordon Holmes: "Discussion on Pituitary Disorders," *The British Medical Journal*, December 4, 1926, page 1035.

(3) W. Moppett: "Recent Work in Cancer Research," THE MEDICAL JOURNAL OF AUSTRALIA, July 24, 1926, page 95.

(4) C. G. Lambie: "Diabetes and Pregnancy," *Journal of Obstetrics and Gynæcology of the British Empire*, Volume XXXIII, Winter Number, 1926, page 563.

(5) E. C. Dodds and F. Dickens: "The Chemical and Physiological Properties of the Internal Secretions," 1925, page 138.

(6) G. C. Mosher: "Incompatibility of Pregnancy and Fibroids of the Uterus," *American Journal of Obstetrics and Gynecology*, Volume XI, 1926, Number 3, page 336.

(7) E. Reynolds and D. Macomber: "Fertility and Sterility in Human Marriages," 1924, page 153.

(8) William P. Graves: "Gynecology," Third Edition, 1923, page 596.

(9) N. Walker: "Sterility Among Hybrids," *Journal of the Canadian Medical Association*, Volume XVI, Number 4, 1926.

(10) I. C. Rubin: "Non-Operative Determination of the Patency of the Fallopian Tubes," *The Journal of the American Medical Association*, April 10, 1920, page 1017; September 4, 1920, page 661.

(11) S. Forsdike: "The Investigation of the Uterus and the Fallopian Tubes by Air and Opaque Bodies in Sterility," *Journal of Obstetrics and Gynæcology of the British Empire*, Volume XXXII, 1925, Autumn Number, page 505.

(12) B. Solomons: "Carcinoma Following Posterior Division of the Cervix," *Journal of Obstetrics and Gynæcology of the British Empire*, Volume XXXIII, Autumn Number, page 434.

(13) H. M'L. Evans and K. S. Bishop: "Existence of a Hitherto Unknown Dietary Factor Essential for Reproduction," *The Journal of the American Medical Association*, September 15, 1923, page 889.

(14) Wm. P. Graves: "Gynecology," Third Edition, 1922, page 64.

Reports of Cases.

EXTRACTION OF A BULLET LATERAL TO THE ODONTOID PROCESS.

By A. B. KEITH WATKINS, M.S. (Lond.), F.R.C.S. (Eng.),
Honorary Ear, Nose and Throat Surgeon to the Newcastle General Hospital, New South Wales.

THE following case is of interest from several points of view.

Clinical History.

Mrs. E.H., aged thirty-nine years, was admitted on August 29, 1926, to the Newcastle General Hospital bleeding from the mouth. She gave the history that she had just attempted to commit suicide by placing the muzzle of a 0·32 calibre revolver actually in her mouth and pulling the trigger.

On examination a small vertical linear wound was seen in the mid-line of the soft palate. No powder stains or injury from the blast of air were in evidence. Her general condition was good.

X ray examination revealed the bullet between the anterior arch of the atlas and the body of the axis (see Figures I and II). The deeper part was in contact with the right side of the odontoid process.

I was asked to see her on September 2, 1926. She was then sitting propped up in bed supporting her head with both hands, the palmar surfaces of the fingers being in contact with the occiput and the wrists being under the angles of the lower jaws. This, she asserted, she did on

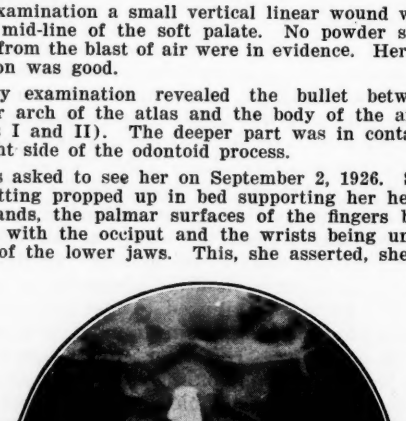

FIGURE I.
Skiagram showing Bullet, Antero-Posterior View.

FIGURE II.
Skiagram showing Bullet, Lateral View.

account of severe shooting pains radiating from the occiput to the vertex on both sides. Practically no rotation of the head was possible. Her temperature was 37·8° C. (100° F.). The wound in the palate was healing well When the palate was raised and pulled forwards, the wound in the posterior wall of the nasopharynx was seen to be covered with slough and pus could be freely expressed.

It was anticipated that removal would necessitate splitting the palate and to make sure it would join well afterwards, it was decided to let the soft palate heal first, unless the posterior infection became severe enough to force our hands before.

By September 8, 1926, the palate had healed and operation was performed under intratracheal anæsthesia. It was found possible with the hooked end of a bent Lack's tongue depressor to draw the soft palate forwards and upwards enough to give access to the region of the atlas and axis without splitting the palate. A vertical incision was made over the bullet wound about six millimetres (a quarter of an inch) to the right of the mid-line. This was deepened and the *longus colli* muscle was divided to a depth of 1·8 to 2·5 centimetres (three-quarters to one inch). Free hæmorrhage interfered with vision and it was only with the aid of a sucker and adrenalin packing that the operation was possible. The incision was held open with a pair of Luc's polypus forceps which was introduced and the blades separated. The bullet was seized with bullet forceps and extracted with difficulty as it was firmly wedged in place. It had been much distorted by the impact and a small piece was removed separately from above the main mass. The bullet is shown in Figure III.

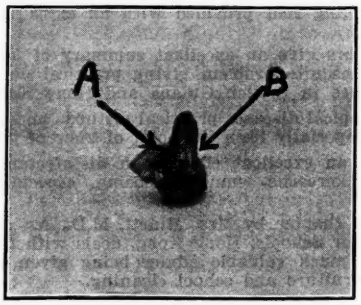

FIGURE III.
Showing the Bullet after Extraction. The inferior impression is shown at "A" and the superior at "B."

After the operation the patient was able to rotate the head better, but the severe occipital pain continued and she spent most of her time supporting the head as described, but this gradually subsided and she was discharged well on September 25, 1926.

Comment.

The points I would emphasize are the following:

1. The atlas and axis are on a lower level when viewed from the front than most people would expect.
2. A normal 0·32 bullet at such a close range would be expected to pass through the neck. In this case, as Dr. Idris Morgan pointed out, the fit of the cartridge cases in the chambers of the revolver used was very loose and stains on the cartridge case showed that much gas had blown back beside it.
3. One of the cardinal symptoms of a crush fracture of the atlas is an occipital pain, identical with that described. This is generally supposed to be due to damage to the great occipital (second cervical) nerves. In the case described such a bilateral injury to the nerve is unlikely to have occurred and it is more likely that the pain was a referred one from a traumatic arthritis of the atlanto-axial joints. Referred pains from joints are not uncommon (for example brachial pain in arthritis of the shoulder, pain in the knee in arthritis of the hip *et cetera*). Such an explanation would account for the frequency of the symptom in crush fractures of the atlas better than the theory of nerve trauma. Further, no anæsthesia could be detected in this patient. Also the skiagram shows the atlanto-axial joints forced open in this case.

Reviews.

THE TUBERCULOUS PROCESS.

A SMALL volume by Dr. Marc Jaquerod on the natural process of healing in pulmonary tuberculosis has been translated into English by Dr. J. Denny Sinclair.[1] The main thesis of the writer is that in addition to the three well recognized modes of evolution of pulmonary tuberculosis, caseation and softening, fibrosis and calcification, a fourth should be added, namely resolution. This may be as complete as in pneumonia. He also believes that the main agent in bringing about this desirable end is the practice of the induction of artificial pneumothorax.

Radiographs are given of various patients at the beginning and end of this treatment and short clinical histories of each patient so illustrated are added. Though it is not specifically stated, it may be assumed that all the patients referred to have been treated by the production of artificial pneumothorax. The author lays stress upon the fact that this method of treatment is used at a much earlier stage in the disease than formerly when it was often recommended as a last resort in patients that had resisted treatment by other means.

Dr. Jaquerod emphasizes strongly the necessity for early recognition and for prolonged treatment of the disease. He instances the general recognition of the fact that a tuberculous spondylitis or arthritis of the knee joint has to remain at rest for a period of many months or even years and considers that a like period should be taken in the cure of pulmonary tuberculosis even if the patient is afebrile. In support of his contention that resolution is possible, he points to the fact that disappearance of tuberculous nodules occurs in tuberculous peritonitis and shows that radiographic evidence is available to prove the total disappearance of tuberculous lesions of the lung which have been clearly in evidence in previous X ray pictures.

In more advanced tuberculosis of the lungs when sclerosis is manifest, he believes that compensatory emphysema of the healthy pulmonary tissues takes a prominent part in the cure of the disease.

[1] "The Natural Processes of Healing in Pulmonary Tuberculosis," by Marc Jaquerod, M.D., translated by J. Denny Sinclair, M.B., Ch.B. (St. Andrews); 1926. London: Baillière, Tindall and Cox. Royal 8vo., pp. 108, with X ray illustrations and diagrams. Price: 6s. net.

The exact place of artificial pneumothorax in the therapeutics of pulmonary tuberculosis cannot yet be said to be satisfactorily determined, but Dr. Jaquerod has adduced considerable evidence in favour of its usefulness.

A HANDBOOK FOR TUBERCULOUS PATIENTS.

THOSE who believe that the consumptive, like the diabetic patient, should have sufficient knowledge of the disease from which he suffers to be able to help himself and his physician (and there is surely much common sense in this attitude) will find a valuable guide provided for their tuberculous patients in the "Recovery Record" by Gerald B. Webb and Charles T. Ryder, of Colorado.[1]

The first eighty pages are devoted to detailed "rules of recovery" for the patient. The text on which the authors mainly build is the value of rest. "Of all the countless remedies proposed, rest alone has stood the test of time." A note of cheerful optimism pervades the book, as the chapter headings indicate: "The Technique of Recovery," "The Hygiene of Recovery" and so on. There is offered much stimulating food for thought, with a strong undercurrent of philosophy. "Conquer fate by acquiescence," "be watchful, but be serene." Sentences like these recur frequently, which should make this book a source of consolation and engender a philosophic calm in one harassed by dread of a "sword of Damocles."

The second half of the book comprises a series of charts, one page to a week, whereon the patient records his daily temperature and other details, according to directions given in the first chapter. Above and below the charts on each page are quotations from many writers, admirable in their aptness, tablets, as it were, of concentrated wisdom to be assimilated twice a week. The following examples indicate their tenor: "This is a conflict which we may enter with a surely founded prospect of success" (Koch). "Our remedies oft in ourselves do lie, which we ascribe to heaven" (Shakespeare). "For tuberculosis we prescribe not medicine, but a mode of life" (Bushnell). "Excessive cough is the worst form of over-exercise" (L. Brown). "I involuntarily turn my back on disaster and eliminate the hypothesis of failure" (Marshal Foch).

The authors make it abundantly clear that they do not intend their "Recovery Record" to supersede a medical practitioner's control. As they quote: "He is a wise patient who follows faithfully the advice of a physician." The medical advice they offer is unexceptionable—some may consider it over-cautious—and on the other hand it is impossible to imagine a patient becoming morbidly introspective as a result of reading this book.

In short, whether for its reading matter alone or put to its full intended use, this is an admirable book to give to the average patient of some education who should take it as his *vade mecum*. It would reach its greatest sphere of usefulness in sanatoria and there is evidence that this is being widely recognized. For instance, it is in routine use, each patient being given a copy, at the Palace Sanatorium, Montana, one of the best known English sanatoria in Switzerland.

MASSAGE.

A SIXTH edition of "Lessons on Massage," the work of the late Mrs. M. Palmer first published in 1901, is recently to hand.[2] In order to bring it up to date it has been revised and largely rewritten by Dr. Dorothy Wood. It still holds its place as one of the standard textbooks on the subject. Unfortunately the author displays a partiality for making contentions, insufficiently supported by evidence, as to some of the effects produced by massage. We are told that it increases the functional activity of the liver cells and relieves portal congestion, but no facts are adduced to prove this claim; similar passages occur throughout the book. Nowadays when the many benefits of massage are so readily acknowledged by the medical profession it is regrettable that writers on this subject and on electro-therapeutics should feel it universally incumbent upon them to make extravagant and untenable claims with regard to the lines of treatment with which they deal.

The book which contains three hundred pages is equally divided between a summary of human anatomy and brief directions as to the use of and indications for massage treatment. In this country at least where it is customary for massage students to learn their anatomy on the cadaver by actual dissections, the section of the book devoted to anatomy will be found quite inadequate. So too in the sections devoted to massage treatment the net has been cast so widely as to include the advocacy of massage for many conditions in which it is at least of doubtful benefit.

The best feature of the book and one which renders it of real value to the masseuse, are the sections devoted to the treatment of fractures and joint injuries. No other work on massage possesses a sounder or more up-to-date exposition of the treatment of these conditions in so far as they concern the masseuse and these sections alone render the work worthy of perusal by anyone engaged in the treatment of recent injuries.

SANITATION IN THE TROPICS.

IN the second edition of "Practical Tropical Sanitation" Dr. E. P. Minett and Dr. A. G. M. Severn have produced a pocket book which, although designed primarily for sanitary inspectors, can be commended generally to residents in tropical countries.[1]

The opening chapter on "living abroad" contains advice on food, exercise and dress which should prove invaluable to new arrivals. Water supplies, sewage and refuse disposal are dealt with in a practical common-sense way, much useful information being given of the simple and effective methods of dealing therewith.

The book is well illustrated with devices familiar to those who had experience of camp sanitation, especially in Egypt during the Great War. In this regard the work can be commended to army regimental and medical officers.

A good description is given of Captain Baber's method of preventing the fly nuisance by constructing manure enclosures of crossed wire netting and iron standards upon concrete platforms with surrounding gutters for trapping fly larvæ. The channel round the base of each enclosure is so constructed that larvæ entering them are prevented from escaping by means of the sides being carried up to an overhanging roof provided with an extra metal overhang.

The authors give an excellent summary of how to deal with the mosquito problem giving practical details based on experience in British Guiana and Hong Kong.

Under tropical diseases practical methods and procedures are given especially from the point of view of prevention.

There is an excellent chapter on disinfectants and insecticides, kerosene emulsion being especially recommended.

The final chapter by Mrs. Minett, M.D., Assistant Medical Officer for Schools, Hong Kong, deals with the hygiene of schools, much valuable advice being given as to site, lighting, furniture and school cleaning.

---

[1] "Overcoming Tuberculosis: An Almanac of Recovery," by Gerald B. Webb, M.D., and Charles T. Ryder, M.D.; Third Edition, Revised; 1927. New York: Paul B. Hoeber, Incorporated. Demy 8vo., pp. 94, with charts. Price: $2.00 net.

[2] "Lessons on Massage," by Margaret D. Palmer, Revised and the Massage Section Rewritten by Dorothy Wood, M.R.C.S., L.R.C.P.; Sixth Edition; 1927. London: Baillière, Tindall and Cox. Demy 8vo., pp. 328, with illustrations. Price 10s. 6d. net.

[1] "Practical Tropical Sanitation: A Pocket Book for Sanitary Inspectors in the Tropics," by E. P. Minett, M.D., D.P.H., D.T.M. and H., late R.A.M.C. (T.F.), and A. G. M. Severn, M.A., M.D., D.P.H.; School Notes by Mrs. Minett, M.D., B.S., D.P.H.; Second Edition; 1927. London: Baillière, Tindall and Cox. Crown 8vo., pp. 188, with illustrations. Price 5s. net.

The Medical Journal of Australia

SATURDAY, SEPTEMBER 3, 1927.

Artificial Feeding of Infants.

On May 16 to 25, 1927, the fourth conference was held of representatives of the Commonwealth and of the several States of Australia on uniform standards for drugs and foods. The report of this conference has now been issued. The conference was attended by the chief health officer of the individual health departments or his delegate, the official analyst and a representative of commercial interests. In the course of the deliberations the members dealt with the vexed question of standard regulations for infants' foods. This subject has been brought to the attention of the medical profession through these columns on many occasions during the past few years. As long ago as 1915 the Government of Victoria determined that manufacturers of infants' food that do not conform in composition with an arbitrary formula for human milk, must place on the label a statement that the food is unsuitable for infants under the age of six months. Soon after a similar regulation was issued in connexion with the *Commerce (Trade Description) Act*, 1905, of the Commonwealth and was adopted in other States. About this time Dr. Halcro Wardlaw and Professor H. G. Chapman published the results of a large number of analyses of the milk of Australian mothers and proved conclusively that the arbitrary formula adopted by the health authorities did not hold good in Australia. Moreover, they had some highly interesting lessons to impart, but unfortunately these lessons have been ignored by some of the departmental authorities. The formula of the health departments fixes the percentage of proteins at 1·5, of fats at 3·5, of lactose at 6·5 and of ash at 0·2. Dr. Wardlaw found that during the first eleven days of lactation the protein content of mother's milk fell from 3·3% to 1·7%. There was subsequently a considerable variation. The average was 1·7%, a value 13·3% above the departmental average. It should, however, be emphasized that the protein of human milk is biologically different from that of cow's milk. It matters nothing if the concentration is more or less, provided that the infant receives sufficient. But it must not be contended that an artificially-fed baby receives the same protein as the naturally-fed infant. In regard to the fat content of mother's milk, Dr. Wardlaw had more to say. The average content was found to be 3·14%, a figure nearly 13% below the departmental figure. But the variation is enormous. The lowest value was 0·56% and the highest 7·6%. The mothers and their infants were healthy, so that it must be assumed that Nature relies much more on biological qualities than on quantities and uses variation in quantity or concentration to meet the vagaries of infants' needs. Fat of human milk is biologically distinct from fat of cow's milk. Could anything be more illogical, more futile than to endeavour to prescribe a fixed percentage of fat in infants' food, even if some latitude above and below be recognized? Experience has shown that just as mother's milk may suit a baby notwithstanding a low or a high fat content, certain artificial foods whose protein and fat contents are materially lower than the arbitrary formula values, have proved to be life-saving at times. At the last session of the Australasian Medical Congress (British Medical Association), Dr. Bruton Sweet pointed out that in warm climates babies did well on diets containing a high protein and a low fat content. Do the departmental authorities know better than the clinician what is an acceptable food for an infant? Dr. Bruton Sweet maintains that cane sugar is as good as lactose in the feeding of infants and yet the standards are inexorable in demanding lactose in all foods for infants.

After much argument, much vacillation, the health authorities agreed in September, 1922, to retain the original formula, but to allow a variation of 35% above or below the figures named. Although this was an advance in the right direction, it remained unsatisfactory. In our issue of February 17, 1923, it was pointed out that the regulation as amended would exclude the sale as infants' foods of "Benger's Food," "Allenbury's Food No. 1" and "No. 2," "Neave's Food," "Horlick's Malted Milk," "Mellin's Food" and some other well known and

reliable proprietary infants' foods. In July, 1924, the Federal Executive Council promulgated new regulations which were wholly satisfactory. According to these regulations the manufacturers were compelled to set forth on the label the percentage composition of the food when prepared in accordance with the instructions. The source of the proteins and fats and the exact nature of the carbohydrates had also to be given. The label had to contain the formula said to be the average composition of human milk. A little later new regulations were issued in Victoria. They were as unsatisfactory from a physiological and biological point of view as the Commonwealth regulations were satisfactory. They were, however, not put into force. During the following two years the Commonwealth Health Department and the Departments of Public Health of New South Wales, Western Australia and Tasmania acted on the Statutory Rule, No. 48 of July 1, 1924. No actual opposition was evinced by the health authorities of Queensland or South Australia, but the rules were not adopted. Victoria refused to fall into line with the other States. It was hoped that the influence of the Federal Health Council would lead the health authorities in Victoria to give effect to the ideal established by the Royal Commission on Health of uniformity of action by all the States. In 1926 the Government Analysts of New South Wales and Queensland took steps to reopen the whole matter and called their colleagues in the other States to a conference in July. At this conference new regulations were drawn up. The analysts revealed that they lacked physiological understanding and that their want of knowledge of the difficulties of the artificial feeding of infants led them to adopt methods which are opposed to experience throughout the whole world. The regulation recommended by them included a clause to the effect that a food sold as an infants' food must contain not less than two-thirds of the proportions of protein, fat, carbohydrate and ash "present in an average human milk" as set out in the arbitrary formula to which reference has already been made. If the food did not conform to the regulation, it was to be labelled "unsuitable for infants under the age of six months."

These recommendations have been submitted to the fourth conference and have been accepted with the alteration that all infants' foods must contain when prepared in accordance with instructions not less than 2·1% of fat and 4% of lactose. It is required to have printed on the label the food value of the quantity of food recommended to be given each day to an infant of one month and the number of calories required by an infant of that age. The number is given as four hundred.

It remains to be seen whether the health authorities are prepared to withdraw the Statutory Rule No. 48 and to substitute the new regulation. Every real authority on infant feeding will protest in the strongest manner possible against the dictation of departmental persons whose duties do not include the treatment of healthy or weakly babies. We have pointed out on previous occasions that an honest manufacturer of a tried and useful infants' food could not print a lying statement that the food is unsuitable for infants under six months of age, merely because it does not contain 2·1% of fat. If the several States adopt this rule, it will be necessary to take steps to inform the public that the foods mentioned above, notwithstanding the foolish utterances of the health authorities, are safe and excellent foods when the best food of all is not available. The health departments would be well advised to limit their activity to a control of the purity of the ingredients of foods offered for sale. They have no business to dictate what is and what is not suitable for an infant.

Current Comment.

THE TREATMENT OF PELVIC INFLAMMATION.

At the present time when surgical operations, especially those on the female pelvic organs, are undertaken by all and sundry, it is unfortunately true that surgical judgement is often lacking. The old adage about fools who "rush in" holds good in matters surgical as well as in many other things. There are many practitioners who regard a diagnosis of salpingitis as an immediate indication for abdominal section, regardless of the fact that the inflammation may subside or that with a reasonable delay it may become more or less localized and may thus be attacked surgically with greater safety to the patient. At the same time it must be remembered that within certain limits there is room for

legitimate difference of opinion both in regard to the time when operation should be undertaken and what form of operative procedure should be adopted. This was exemplified at the Sixth British Congress of Obstetrics and Gynæcology held at Manchester in April, 1927. Among the papers read at this meeting is one by Aleck Bourne on the treatment of acute gonorrhœal salpingitis and one by Beckwith Whitehouse on the expectant treatment of pelvic inflammation.[1] One of Bourne's statements is most important and should be emphasized. He points out that while it is right and proper to devote serious attention to the treatment of the Fallopian tube in gonorrhœal salpingitis, this alone will not cure the patient. These patients are suffering from gonorrhœa with endometritis and cervicitis as focal lesions, each of which will maintain pelvic symptoms long after the acute peritoneal illness has subsided. This is true in large measure also of tubal conditions caused by other microorganisms. The question arises as to when operation should be performed and what type of procedure should be employed. Bourne holds that early operation is often advisable. It is to be remembered that he refers more especially to gonorrhœal conditions. He believes that if a suitable time for operation is chosen, it is possible to perform salpingostomy before structural changes have taken place in the tubal mucosa and so to prevent the formation of a thickened functionless tube or a tubal pus sac. He regards it as certain that free opening of the Fallopian tube must prevent the formation of pyosalpinx. It is also in his opinion reasonable to suppose that drainage of the closed tube will be at once followed by subsidence of acute intratubal inflammation and resolution of the inflammatory process. He concludes, however, that if it is clear that the tube is damaged beyond hope of repair by the acuteness of the inflammation or if chronic thickening is present, it is undoubtedly best to remove the tube. In this operation of salpingostomy an acutely inflamed organ is left to drain into the peritoneal cavity. It is true that the scavenging powers of the peritoneum are great and that the pelvic peritoneum is less susceptible to invading organisms than any other parts of that structure, but the principle is wrong and it is certain not only that patients will have to be seen in the early stages of the inflammation, but also that the utmost judgement and discrimination will be necessary. Bourne is obviously skilled and experienced in this regard. He refers to seventeen patients subjected to salpingostomy either by him or on his advice during the last four years. Convalescence has "usually been very satisfactory and never dangerous or inordinately long." The majority of patients had a normal temperature within a week, but two were febrile for a month.

The other aspect, that of conservatism, is discussed by Whitehouse. He points out that the question at stake is not whether severe grades of salpingitis shall be treated without surgery, but rather when surgery can give the best results. He has examined the records of all patients admitted to the General Hospital, Birmingham, between the years 1911 and 1923. During this period 137 hysterectomy operations were performed for diseased appendages and during the same period 250 conservative operations were carried out for the same conditions. These patients are regarded as representing the end results of the expectant treatment of pelvic inflammation. A *questionnaire* was also sent to the 250 "conservative" patients and replies were received from 110. The mortality among the patients subjected to hysterectomy was 7·5% and among the 250 subjected to conservative operations 1·2%, giving a total operative mortality for the combined groups of 2·5%. In 81 conservative operations on the Fallopian tubes the immediate mortality was 2·4% and no deaths occurred among seventeen patients treated for pelvic abscess by incision and vaginal drainage only. It was found that 73·5% of the patients were able to carry out their normal duties. Of 26 patients treated for pelvic abscess and acute pyosalpinx by pelvic or abdominal drainage only, 17 were in "good health" and 18 were able to carry out their usual duties. In regard to the question of subsequent pregnancy, Whitehouse points out that it is not possible with expectant and conservative methods to establish a strong position. Among 110 patients only 19 or 17·2% became pregnant afterwards. These figures are not absolutely correct, for some of the patients are widows or single and some of them reached the menopause within a short period. It is doubtful whether any better results will be achieved by salpingostomy. Bourne is not able to report a single case of pregnancy among his patients, but his series is admittedly a small one and several of his patients are unmarried. Pelvic inflammation does not destroy the power of conception as much as might be supposed, for among 55 patients treated by expectant methods who had subsequently to submit to unilateral salpingectomy, there were twelve who afterwards became pregnant. Such is the case stated by Whitehouse for expectant treatment. It must be made clear that he holds that expectant treatment should be abandoned as soon as pus is found to be present. He believes that during the acute stage any surgical interference should be of the simplest character. Drainage is the simplest of all procedures and this should be done by the vaginal route whenever possible. This is the same conclusion as was reached by Worrall in this connexion in 1925. He laid stress on the importance of vaginal cœliotomy, especially as a preliminary to abdominal removal of a septic focus. He pointed out that by this routine the mortality had dropped in Sydney Hospital from 20% in 1895 to 1%. The whole question resolves itself into allowing the *vis medicatrix naturæ* to come to the patient's assistance by limiting as far as possible the area of involved tissue. Further, the methods of expectant treatment commonly used, such as rest, free purgation and the application of heat by douching and so forth, are really a means of treating the condition as a whole (Bourne emphasized the necessity for this) and are not directed, as salpingostomy is, at what may be only part of the diseased area.

[1] *The Journal of Obstetrics and Gynæcology of the British Empire*, Summer Number, 1927.

Abstracts from Current Medical Literature.

MEDICINE.

Chronic Cholecystitis.

M. CHIRAY, I. PAVEL and J. MARIE (*La Presse Médicale*, October 13, 1926) discuss the treatment of chronic cholecystitis without gall stones. The onset is always vague, with variable digestive symptoms and constipation. The ætiology has been much discussed; the latest investigations by Huntemüller show that the wall of the gall bladder in patients submitted to operation is infected in 100%, whereas the bile is infected in 26%. The predominant organism is the staphylococcus and not the colon bacillus, typhoid bacillus or the streptococcus which Rosenow incriminates. Investigation of the bile infection by means of the duodenal tube is now largely discredited even in America and is obviously unreliable if the organism in the bile differs from that in the wall of the gall bladder as Huntemülller states. The mode of infection may be direct, through the bile ducts or it may occur indirectly through the blood stream or the lymphatics. Treatment consists in administration of the oil of Harlem, two or three capsules *per diem* for ten to fifteen days, followed by urotropine, fifty centigrammes, before each meal for a similar period; a rest of two weeks is then allowed and the treatment repeated. In addition warm Vichy water is given daily on an empty stomach. If these methods do not relieve the patient, duodenal drainage is practised once, twice or three times a week for periods of four to eight hours at a time. As a rule the patient is relieved by one of these forms of treatment, especially if continued for some months; but if not, it is advised that cholecystectomy be performed and that this be supplemented by duodenal drainage if necessary.

Gastric Ulcer and Tabes Dorsalis.

H. PFITZNER (*Deutsche Medizinische Wochenschrift*, September 10, 1926) describes four cases of *tabes dorsalis* in which the gastric crises were associated with ulcers on the lesser curvature of the stomach. He considers that this association was not merely accidental, but was due to the specific damage to the visceral nerves by the nervous lesion. The differential diagnosis between the two conditions depended mainly on the radioscopic examination which was confirmed in all four cases at the time of operation.

Congenital Heart Lesions.

T. VALLEDOR (*Vida Nueva*, February, 1927) remarks on the paucity of symptoms in congenital heart lesions compared with the rich symptomatology presented by adults. The two principal are cyanosis and auscultatory phenomena. Dyspnœa is often pronounced, but œdema is rare and is denied by some observers. Cyanosis is in some cases constant, in others it is variable in presence and degree. It is influenced by active movements or excitement or by the degree of repose of the patient. He states that there are various theories as to the causation of the cyanosis, but discusses only one which attributes it to mixture of the blood in the ventricles through an interventricular foramen. When this patency is small and valvular in action and when there is no pulmonary stenosis or other cause of congestion in the lesser circulation, the relatively high left ventricular pressure prevents the entrance of venous blood to the systemic arterial tree and there is no cyanosis. Obstruction of the lesser circulation causes escape of blood from the right ventricle to the left and produces cyanosis. In the eleven cases reported on by the author, three patients who presented lesions associated with permanent cyanosis, died during the course of minor intercurrent affections. Of those diagnosed as having slight interventricular patencies with slight or no cyanosis, all were alive and developing relatively well. Where hereditary syphilis was a causative factor, antisyphilitic treatment greatly improved the general condition.

Gastric Function in Chronic Arthritis and Fibrositis.

S. MILLER AND F. B. SMITH (*Quarterly Journal of Medicine*, April, 1927) find that achlorhydria and hypochlorhydria occur five times as frequently in patients suffering from chronic arthritis and fibrositis as in normal persons. Hyperacidity in chronic arthritis has exactly the same incidence as in healthy persons. Chronic arthritis, associated with sepsis is accompanied by a range of gastric acidity very little different from the normal, but chronic arthritis not associated with sepsis is more frequently accompanied by an achlorhydria and manifests more serious stigmata of metabolic derangement. In non-articular fibrositis, on the other hand, the incidence of achlorhydria and hyperchlorhydria is common. In osteoarthritis the percentage of patients with a high acid content is very large.

Dilated Colon Simulating Pneumothorax.

H. CARPENTER (*Tubercle*, December, 1926) relates the history of a patient, a parlourmaid, aged twenty-seven years, who stated that she had suffered from a bronchial catarrh of ten days' duration. The illness had commenced with cough, expectoration and soreness of the chest, especially on the left side. The digestion was good, there was no vomiting nor constipation and the patient felt able to work. On examination, the pulse rate was found to be 94 in the minute and the temperature was subnormal. The thorax was elongated. The pulsations of the heart were visible in the second and third interspaces to the right of the sternum and in the third and fourth close to its left border. The expansion of the left lung was very deficient. The breath sounds were harsh at the apex and air entry elsewhere was almost absent. A modified anvil sound was elicited over the whole of the upper lobe, but there were no adventitious sounds. The signs in the right lung were normal and the sputum contained no tubercle bacilli. A provisional diagnosis of left-sided pneumothorax was made. On examination by a radiographic screen the heart was seen to be symmetrically placed, but lying transversely and indenting the line of the diaphragm. On both sides the diaphragm was pushed high up and the liver was separated from the diaphragm by a gas loaded colon which had also pushed the stomach downwards. The screen appearances at first suggested an aerophagic condition, but the outlines of the stomach and bowel, as revealed by a barium meal and enema, indicated an abnormal dilatation of the splenic flexure accompanied by gastroptosis. A diagnosis of pneumothorax in the absence of abnormal appearances in either lung was clearly excluded.

Leucocytosis Accompanying Fractures.

R. W. WALTON (*Journal of the American Medical Association*, April 9, 1927) discusses the well known moderate leucocytosis of polymorphonuclear type accompanying injury to bone. It reaches its maximum in twenty-four hours after the injury and remains until immobility is secured. The proper reduction and immobilization of the fragments is followed by a rapid fall in the white cell content which reaches normal once more by the fifth or sixth day. The response of the white cells in the old and debilitated is feeble. The altered white cell content of the blood is the direct result of injury to the bone and periosteum and varies directly in proportion to the amount of displacement of the fragments and of the amount of injury to the soft parts.

Gastric Secretion in Graves's Disease.

H. MOLL AND R. A. M. SCOTT (*The Lancet*, January 8, 1927) hold that in Graves's diseases it is common to find either an achlorhydria or hypochlorhydria. They report twenty-two cases of the former and fifteen of the latter. The average duration of symptoms in the achlorhydric patients was 2·9 years, in the hypochlorhydric patients 1·1 years, and in those yielding normal gastric secretions 0·5 year only. The authors consider that these figures lead to the assumption that the diminution of hydrochloric acid occurs during the course of the disease and is neither a causative nor a predisposing factor.

The Premature Ventricular Beat.

G. BOURNE (*Quarterly Journal of Medicine*, April, 1927) has investigated the effects of exercise and posture and of the administration of amyl nitrite and atropine upon the premature ventricular beat as shown upon electrocardiographic tracings of

twenty-eight patients. He finds that exercise diminishes or leaves unaltered the number of premature beats after the deceleration period in normal and rheumatic persons, but increases their frequency after the deceleration period when arteriosclerosis or coronary disease is present. Further, amyl nitrite acts in a similar manner to exercise. Atropine, on the other hand, diminishes the premature beats, no matter what their ætiology. Posture always seems to cause an increase in the premature beats. The curves taken from thirteen patients seem to show that "reentry" rather than "parasystole" is the causative mechanism.

Anæmia.

D. GRAHAM (*Canadian Medical Association Journal*, April, 1927) considering the anæmias as a whole, states that the diagnosis is easy, though often missed by reason of the presence of purpura, jaundice *et cetera*. A mere diagnosis is useless, unless an attempt be made to determine the cause. The presence of anæmia always indicates dysfunction of the hæmatopoietic system, primarily affecting it or supervening secondarily after disease of other parts of the body. Anæmia results, therefore, from three main factors: loss of blood, increased destruction of blood or a combination of both these factors. The findings obtained from blood examination are a direct reflection of the reactions of the bone marrow. The causes of anæmia are hæmorrhages, parasites, malignant disease and known or hitherto undiscovered poisons. The clinical signs depend upon whether the onset is slow or sudden, due to loss of blood, increased destruction or deficient formation. Anæmia is most often secondary to disease of other parts of the body and therefore the marks of the disease are due only partly to the anæmia. It is true that certain types of anæmia give rise to quite characteristic signs and symptoms, the association with splenomegaly, for instance, and the occurrences of hæmorrhages from mucous membranes or skin.

Purpura Associated with Gonorrhœa.

CHEVALIER, LEVY BRUHL and others (*La Presse Médicale*, January 19, 1927) report the history of a young woman who suffered for six months from a generalized purpura while in good general health. Her temperature was normal throughout the course of the disease. Examination of the blood revealed a slight anæmia, diminution in platelets and delay in clotting. There were no hæmorrhages from any mucous surfaces, save for some bleeding from the gums. The patient had been recently treated for a gonorrhœal metritis which was said to have been cured. Nevertheless, the mucus from the cervical canal was found to contain gonococci. Blood culture revealed the same organism in the general circulation, in spite of the fact that no fever had occurred throughout the illness. Antigonococcic serum was injected without result and after several such injections the patient disappeared. Seen later, she presented the picture of an intense anæmia, the purpuric lesions still persisting as before. A series of blood transfusions greatly improved her condition, but a miscarriage later took place, followed by severe hæmorrhage. The writers lay stress on the extreme rarity of a purpura of gonnococcal origin, especially when unassociated with fever and of such remarkable chronicity.

Lævulose Tolerance Test.

G. KING (*The Lancet*, February 19, 1927) records some observations on the lævulose tolerance test of hepatic efficiency. Lævulose is said to be the only sugar which after ingestion causes no rise in blood sugar in normal subjects. Fifty-three patients were studied. Fasting blood sugar was estimated and then forty-five grammes of lævulose in one hundred cubic centimetres of water were ingested. Blood sugar estimations were made every half hour afterwards for two hours by Folin and Wu's method. The resulting figures indicate the amount of glucose *plus* lævulose in the blood, an estimation of lævulose alone in the blood not being practicable. Ten normal subjects investigated had an average blood sugar (fasting) of 0·096 and an average rise of eight milligrammes per hundred cubic centimetres (that is to 0·104) after lævulose ingestion with a return to normal in one and a half to two hours. The urine of five persons slightly reduced Fehling's solution during the test, indicating the low normal renal threshold for lævulose. Twelve patients with portal cirrhosis manifested a rise in blood sugar above normal and failure to return to normal in two hours, the average rise in blood sugar being between twenty-five and one hundred and four milligrammes. In syphilitic cirrhosis, splenomegalic cirrhosis, malignant disease of the liver and catarrhal jaundice similar figures were found. In the latter condition these results indicate that the liver cells are at fault, possibly due to infection. Simple obstructive cholangitis would not be expected to cause such a rise in blood sugar, since it is the liver cell which is responsible for the storage of lævulose and if these cells are normal, a rise does not occur. In acute cholecystitis and acute cholangitis an abnormal rise in blood sugar was noted due probably to some disturbance of function of the associated liver cells. In two patients with arsenical jaundice following treatment of syphilis the blood sugar rose seventy-four and eighty-four milligrammes per hundred cubic centimetres, indicating considerable impairment of liver function as expected. In cardiac failure with enlarged liver a slight rise in blood sugar was noted in two subjects (twenty-four and twenty-five milligrammes per hundred cubic centimetres), in another subject no abnormal rise was found. In conclusion it is said that the test is useful in diagnosis, since a normal response to the lævulose test indicates a normal liver, in prognosis because the height and duration of the rise in blood sugar is in proportion to the degree of liver damage and in controlling treatment. The lævulose test reveals involvement of the liver in carcinoma of the stomach and so contraindicates operation. In the arsenical treatment of syphilis the results of a lævulose tolerance test may indicate liver damage before jaundice is present and may be a guide in dosage.

Hepatic Disorders.

D. T. DAVIES (*The Lancet*, February 19, 1927) discusses the diagnosis of hepatic disorders. Forty grammes of pure galactose in four hundred cubic centimetres of water were ingested by the starving patient. Blood sugar was estimated before ingestion and every half hour afterwards for two or three hours. The urine was collected up to the fourth hour and the amount of reducing substance estimated. This represents the amount of galactose lost *viâ* the urine and is a rough test of hepatic drainage, provided there are no diabetes and little ascites. Normally the blood sugar is not raised and the urine contains less than one gramme in three hours. In jaundice due to mechanical obstruction, for example carcinoma of pancreas, similar results are found, the glycogenic function of the liver being unimpaired; also in extrahepatic jaundice of pernicious anæmia, in acholuric jaundice and jaundice after hæmothorax or hæmoperitoneum a normal result indicates that the liver cell is intact. Definite positive results occur in catarrhal jaundice, the blood sugar rising to one hundred and sixty milligrammes per hundred cubic centimetres or more and urinary sugar to two grammes or more. In syphilis also a response to the galactose test indicates damage to the liver cells. Cirrhosis of the liver yields variable results. The galactose test used with other tests such as Van den Bergh's and the estimation of the cholesterol content of the blood, give useful indications of damage to liver cells or otherwise. A cholesterol content above one hundred and eighty milligrammes per hundred cubic centimetres of blood was found almost certainly to indicate obstructive jaundice or nephrosis. Fouchet's test for bilirubinæmia reveals one part of bile in 60,000 of blood and is more delicate than the eye sense alone, whereas Van den Bergh's test is not. Urobilin in the urine indicates a toxic and not a mechanical jaundice, whereas bile salts in the urine indicate obstructive jaundice. A diastase content in the urine of over fifty units suggests icterus due to a primary pancreatic lesion. The important observations in connexion with the galactose test are that a difference greater than thirty milligrammes in blood sugar before and after the ingestion of forty grammes of galactose indicates a toxic or infective jaundice (including catarrhal jaundice). An amount of glycosuria greater than two milligrammes indicates hepatic deficiency.

British Medical Association News.

SCIENTIFIC.

A MEETING OF THE TASMANIAN BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Royal Society's Rooms, Hobart, on August 16, 1927, DR. F. FAY, the President, in the chair.

Banti's Disease with Cirrhosis of the Liver.

DR. TERENCE BUTLER reported the history of a male patient, aged sixty-five years, who had been referred to him by Dr. F. Fay. The patient had felt "off colour" for some time and had complained of pain in his abdomen and of weakness. It had been found on examination that the spleen was much enlarged. The superficial veins from the ribs to the pubes had been enlarged and distended. The liver had been slightly enlarged and some ascites had been present. No reaction had been obtained to the Wassermann test. The blood picture had not been distinctive, having been characterized by a slight lymphocytosis and a slight anæmia. Dr. Butler considered that the condition might be an atypical form of Banti's disease and cirrhosis of the liver, although the patient gave no history of alcoholism. Treatment had been carried out by the oral administration of arsenic. Six weeks later an eczematous eruption had broken out all over his body and his left leg had begun to swell. His carbohydrate intake had been reduced and both these signs had disappeared. In a month the ascites had disappeared and the spleen had become so much smaller that it could scarcely be felt under the costal margin. The patient's general health had improved so much that he had been able to resume work.

DR. F. FAY said that at one stage the patient had looked like a dying man, the improvement a week or so later had been remarkable.

DR. A. W. SHUGG inquired whether the condition had followed any acute disease.

DR. E. A. ROGERS wanted to know whether the rash could have been caused by the arsenic.

DR. BUTLER answered Dr. Shugg and Dr. Rogers in the negative.

DR. E. A. ELLIOTT asked whether the patient's heart and blood pressure had been normal and whether the dilated veins had persisted.

DR. BUTLER said that all the organs other than those mentioned by him had appeared to be normal and that the dilatation of the veins had disappeared. At no time had any fever been present.

DR. ROGERS asked whether it was possible that thrombosis of the splenic vein had been present.

DR. FAY said that the onset had been too gradual and that the other symptoms were not in conformity with this suggestion. It seemed to him that the condition was a primary splenic condition.

Meningeal Symptoms Following Influenza.

DR. A. W. SHUGG reported the clinical history of a woman, aged thirty years, whose illness had begun with an attack of influenza. Two or three weeks later on she had been troubled with headaches and these had become so severe that she had been compelled to take to her bed. On sitting up or on attempting to stand she had become giddy, had felt faint and had almost lost consciousness. Vomiting had occurred. During this period no neurological signs had been present. The fundi had been normal, no neck rigidity had been present, sensation had been normal, but on one occasion the knee jerks had been exaggerated. The patient was a woman of the neurotic type. The systolic blood pressure had been 125 and the diastolic pressure 80 millimetres of mercury. The urine had been normal. Lumbar puncture had been performed and forty cubic centimetres of clear fluid under considerably increased pressure had been removed. The patient's condition had improved at once, the headaches had gradually become less and in a short time she had been quite well.

The second patient whose history was reported by Dr. Shugg, was a girl, aged fifteen years. She had had an operation for appendicitis five weeks prior to the onset of her illness, it had been necessary to drain the abdomen at the time of operation. The patient was an underdeveloped child who had not menstruated and whose physical development was below normal for her age. She had suffered from occasional headaches and later on fits had occurred. These fits had not been epileptic in nature. The patient had not had convulsions, there had been no cry and she had not bitten her tongue. She had simply merged into unconsciousness and had become stiff for a period lasting for from half an hour to two hours. After these attacks Kernig's sign had been present together with neck rigidity and exaggerated knee jerks. All these signs had always disappeared on the following day. No reaction had been obtained to the Wassermann test and no other signs had been present. Dr. James Sprent had been called in consultation and he had expressed the opinion that ovarian deficiency might be the underlying cause.

Lumbar puncture had yielded cerebro-spinal fluid under increased pressure. It had been clear and had contained a few mononuclear cells and a few staphylococci (probably from contamination). Dr. Walch had reported that the globulin content was not increased and that five cells had been present in each cubic millimetre. The day before the performance of the lumbar puncture the patient had had eight fits. Since the lumbar puncture she had had no fits and at the time of the meeting was practically well. Ovarian extracts had been given by hypodermic injection.

A MEETING OF THE NEW SOUTH WALES BRANCH OF THE BRITISH MEDICAL ASSOCIATION was held at the Sydney Hospital on July 14, 1927. The meeting took the form of a series of clinical demonstrations by members of the honorary staff.

Elephantiasis Genitalia.

DR. C. E. CORLETTE showed a male patient, aged forty years, a traveller, who had noticed a swelling in the left leg twenty years previously. This had persisted and had extended until it involved the whole leg. Later on the penis and scrotum had become swollen and still later the right leg. The first attack had been accompanied by severe pain and a rise in temperature of an intermittent type. At that time the patient had been in perfect health and the only thing that he could remember was that just about that time he had had several loose and decayed teeth extracted. After this he had had several attacks of a similar nature.

In 1922 the patient had been admitted to Sydney Hospital and had been operated on. Lymphoplasty had been performed on the right leg, the ultimate result being a reduction in the girth of the leg of 11·25 centimetres (four and a half inches). He had then been discharged, but had continued to have attacks at intervals and had been again admitted to hospital in 1924. This time a careful search had been made for microfilariæ, but without success and he had again been discharged.

The patient had again been admitted to hospital on June 29, 1927. His temperature had been high and had remained so for several days. On examination both legs had seemed to be very much swollen. They had not pitted on pressure and had not been tender on palpation. The penis and scrotum had been enormously enlarged and very tender. The scrotum had been covered with small cystic tumours varying in size up to that of a pea. Some tenderness had been present in the lower part of the abdomen. He had also complained of bilateral lumbar pain. Otherwise physical examination had revealed nothing abnormal, with the exception that pus exuded from the remaining teeth when pressure was applied to the gums.

A blood examination had revealed the following:

Erythrocytes (per cubic millimetre) ..	5,040,000
Hæmoglobin value	90%
Colour index	0·9
Leucocytes	10,000

A fractional meal had been carried out and a practically normal result obtained. An examination of the fæces had

revealed no streptococci or other abnormality. No reaction had occurred to the Wassermann test. A radiological examination of the teeth and gums had revealed definite alveolar absorption. The two remaining teeth had been extracted and a carefully prepared culture from the roots had revealed the presence of *Staphylococcus pyogenes albus* and a mixed growth including hæmolytic streptococci. At the time of demonstration the patient was fairly well and had had no further attacks. He had not lived outside New South Wales before the onset of the disease.

Reamputation of the leg by Stokes-Gritti Amputation.

Dr. Corlette also showed a male patient who had had the left leg amputated below the knee. As a result of severe sepsis the stump had not healed. Dr. Corlette had then performed a Stokes-Gritti amputation. The condyles of the femur had been removed and also the articular surface of the patella. The cut surface of the latter bone had been applied to the cut end of the femur. As the tendon of the quadriceps muscle had been adherent to the end of the femur, there had been no danger of the patella being pulled upwards. Two Carrel-Dakin tubes had been inserted into the wound and irrigation with Dakin's solution had been carried out every four hours.

Fractures.

Dr. Corlette gave a demonstration of clinical photographs depicting apparatus for the treatment of fractures and illustrated his methods on patients in the fracture ward.

Fracture of the Neck of the Femur.

DR. H. SKIPTON STACY showed a male patient who had fallen down some steps on May 27, 1927. On admission he had complained of pain in the right groin and of inability to move the right leg. On examination tenderness had been present in the right groin and just below the greater trochanter. Loss of mobility had been present together with 1·8 centimetres (three-quarters of an inch) of shortening of the right femur. Nélaton's line had been normal. The limb had been put on a long Liston splint. X ray examination had revealed a transverse fracture of the femur at the level of the lesser trochanter with outward and forward displacement of the upper fragment.

On May 28, 1927, skeletal traction had been applied with hooks and 6·75 kilograms (fifteen pounds) extension. On June 1 X ray examination had revealed forward and outward displacement of the upper fragment. On the following day anæsthesia had been induced and the limb put in plaster by Whitman's method in a position of extension, abduction and internal rotation. Lateral traction had been applied to the upper third of the thigh while the plaster was being adjusted. On June 6 the radiologist had reported inward displacement of the distal fragment with slight overlapping.

On June 14, 1927, an incision had been made vertically from 7·5 centimetres (three inches) above the greater trochanter to the same distance below it. The muscles had been retracted and the lower fragment had been found displaced medially and posteriorly, while the upper fragment was rotated forwards and outwards. Some bone and muscle had been found interposed between the ends of the bone; these had been removed and the ends levered into position. A plate had then been applied and the wound closed. A glove drain had been inserted for twenty-four hours. The limb had been bandaged to a long Liston splint. Subsequent X ray examination had revealed a good position with some adduction of the lower fragment.

Lymphangioplasty.

Dr. Stacy also showed a male patient on whom lymphangioplasty had been performed on account of œdema of the forearm and hand. A report of this case will be published in a subsequent issue.

Subtemporal Decompression.

Dr. Stacy also showed a male patient who had been admitted to hospital on November 1, 1926, with a history of having fallen down a lift well. On admission the patient had been drowsy, but not unconscious and he had not remembered the accident. A large tense hæmatoma had been present in the right temporal region. Hæmorrhage had taken place into the right upper eyelid and proptosis of the right eye had occurred. Blood had been present in both nostrils and in the naso-pharynx. The right pupil had been very sluggish and larger than the left. The knee jerks had been exaggerated and the plantar reflex on the left side had been extensor in type. An X ray examination had been carried out on November 2, 1926, and a report received of the presence of a long fissured fracture of the frontal bone without depression.

The patient had vomited during the first day. On the fourth day lumbar puncture had been performed and blood stained fluid under increased pressure removed. The patient had been kept in bed for three weeks, had steadily improved and been discharged on November 24, 1926, complaining of deafness in the right ear.

He had been readmitted on February 22, 1927, complaining of severe headache and tinnitus in the right ear with transient diplopia. The ocular fundi and media had been normal on both sides. The blood serum had not reacted to the Wassermann test. An operation had been performed on March 1, 1927, and an elliptical incision made behind the right ear. A flap had been turned back, the temporal muscle incised and the pericranium elevated. The skull had been trephined and the opening enlarged by gouging away bone. On incision of the *dura mater* fluid which was not under increased pressure, had escaped. The muscle had then been sutured over the trephine hole and the wound closed. The patient had made an uninterrupted recovery and had been discharged on March 22, 1927, free from headache and diplopia, but with slight deafness in the right ear. The ear, nose and throat surgeon had reported that the aural condition was one of nerve deafness.

Granuloma Annulare.

DR. NORMAN PAUL showed a young girl who presented a circinate lesion, *granuloma annulare*, on the flexor surface of one of the fingers of the right hand and also two lesions on the lower and posterior aspect of the thigh. These lesions had appeared only recently, but the child had previously suffered from a lesion on the flexor surface of the right wrist.

DR. GEORGE R. HAMILTON showed an unmarried woman, forty-five years of age, who also suffered from *granuloma annulare*. For five years the patient had had on both hands and elbows an eruption characterized by small papules arranged in rings. There were also some lesions which had been present for only one year. In all there were nine such ringed eruptions. Dr. Hamilton pointed out that the condition was interesting in view of the fact that the patient was also suffering from diabetes. This fact might lead to the view that the skin eruption was *xanthoma diabeticorum*. A section, however, had been examined by Dr. Inglis and *granuloma annulare* had been diagnosed.

Ringworm of the Nails.

DR. NORMAN PAUL showed a young woman who was suffering from ringworm of the nails. The nails of the thumb and index finger were broken, dry and lustreless in appearance. The nails were also thickened. The condition had appeared after the patient had had her nails manicured and Dr. Paul pointed out that this was apparently a common method of infection. Microscopical examination after scrapings were soaked in *liquor potassæ* revealed the presence of the mycelium of ringworm.

Leucodermia with Returning Pigmentation.

Dr. Paul also showed a young woman who exhibited extensive areas of leucodermia in which the pigmentation was returning. The return of pigmentation was well demonstrated by a photograph which had been taken some time previously and in which the leucodermic areas were distinct and sharply defined. The patient had been taking thyreoid extract for some time.

Rodent Ulcers, Epithelioma, Multiple Keratoses and Milia.

Dr. Paul's fourth patient was a man, aged fifty-five years, who presented multiple rodent ulcers, some of which were

small. One was superficial and was undergoing cicatrization and one on the bridge of the nose measured twenty-five by eighteen millimetres. The patient also had an epithelioma, multiple keratoses and miliia. He was undergoing radium treatment and good results were expected.

Gummata.

Dr. Paul's last patient was a young woman who had resided in the country. She had on her forearms, face and forehead extensive gummata which had produced a good deal of destruction. Pronounced ectropion of the eyelid was present. Dr. Paul pointed out that gummata of this type were rare since the introduction of the arsenical treatment of syphilis.

Urological Conditions.

DR. REGINALD BRIDGE showed a series of pyelograms depicting various pathological conditions of the ureter and kidney and skiagrams demonstrating pathological conditions of the bladder. He also showed pathological specimens removed from the patients from whom the skiagrams had been taken, and discussed the significance of the symptomatology in each instance. The conditions exemplified included tuberculous disease of the kidney, hydronephrosis and hypernephromata. The exhibits included dissections of the bodies of guinea pigs which manifested tuberculous involvement after the injection of urine from patients suffering from renal tuberculosis.

Dr. Bridge also showed several microscopical sections of malignant disease of the prostate. He emphasized the importance of submitting to microscopical examination every prostate removed at operation. Two of the sections shown by him had been taken from prostates which were affected by adeno-carcinoma. In neither instance had it been possible to arrive at a correct diagnosis by clinical methods alone.

A New Lithotrite.

DR. Bridge also showed Canny Ryall's new lithotrite and pointed out that with this instrument it was possible to see each stone clearly before it was crushed.

Spondylitis Deformans.

DR. H. C. ADAMS showed a male patient, aged forty-three years, who had been admitted to hospital on June 9, 1927, with a complaint that for six weeks he had suffered from pain in the left thigh radiating to the left lumbar region and across the back to the right lumbar region. On examination the patient's heart and chest had been normal. His teeth had been removed. Some tenderness had been present in the left lumbar and left inguinal regions. The left thigh had been 2·5 centimetres less in circumference than the right. Slight tenderness of the prostate had been present. The urine had been normal. X ray examination had revealed the presence of *spondylitis deformans*. Treatment had been carried out by means of prostatic massage and the inflation of the skin over the left hip with oxygen. On June 27 the pain had disappeared and, as the patient was feeling much better, he had been discharged from hospital.

Albuminuric Retinitis.

Dr. Adams also showed a male patient, aged forty-five years, who had been admitted to hospital on June 21, 1927, complaining of failing eyesight of six weeks' duration, blurring of the vision for four days, slight breathlessness on exertion for two years and slight swelling of the legs and ankles. The patient had suffered from malaria in 1915 and had been in hospital on account of breathlessness and swelling of the feet two years previously. He had been in hospital with severe epistaxis two months previously. On examination the cardiac apex beat had been found in the sixth intercostal space 13·75 centimetres (five and a half inches) from the middle line. No murmurs had been audible. The systolic blood pressure had been 210 and the diastolic pressure 150 millimetres of mercury. Examination of the urine had revealed a specific gravity of 1008, a heavy cloud of albumin, but no sugar, pus or blood. Some dulness and crepitations had been audible at the bases of both lungs. In the beginning of July the patient had complained of intermittent headache, but this had become much easier.

The serum had not reacted to the Wassermann test. A blood count had revealed a considerable degree of anæmia and when the urea concentration test was carried out, the percentage of urea had not risen above 1·0 in three hours. The blood urea had been 61 milligrammes per hundred cubic centimetres and the blood creatinin five milligrammes per hundred cubic centimetres.

The patient's eyes had been examined by an ophthalmic surgeon who reported on June 20, 1927, the presence of albuminuric neuro-retinitis. This condition had been more pronounced in the right than in the left eye. Much exudate and some fresh hæmorrhages had been present. On July 13 the eye condition had improved. No fresh hæmorrhages had occurred and the exudate had become distinctly less.

Chorea.

The third patient shown by Dr. Adams was a boy, aged eleven years, who had been admitted to hospital on May 2, 1927. Twelve months prior to admission the patient had suffered from rheumatic fever, but since that time had developed purposeless movements and incoordination. On admission the patient had moved continuously in bed. The movements had not been violent and no facial spasms had occurred. His intelligence was normal. The tongue had been furred. The heart and cranial nerves had been normal, but the knee jerks had been absent.

On May 12, 1927, the tonsils had been removed and eight days later he had been deprived of two septic teeth. The patient's condition had not improved, but had tended to become worse. On June 13 a systolic murmur had appeared at the mitral area and salicylates had been ordered. On June 14 a test meal had revealed the presence of achlorhydria and at this time the patient had been very restless and violent in his movements and it had been necessary to pad his cot. Dilute hydrochloric acid had been ordered. Since that time considerable improvement had taken place.

Disseminated Sclerosis.

Dr. Adams also showed a male patient, aged thirty-six years, who had been admitted to hospital on May 19, 1927. Four years previously the patient had been seized with a tired feeling which wore off with a rest. A year later he had injured his spine and had been in hospital for seven weeks. Since that time he had been weak and slow in his movements and at the time of admission he had been unable to hold his urine when he experienced the desire to micturate. He had been unable to walk without assistance and had complained of pain in the back and of hot flushes. He had been giddy and liable to fall off a chair and had had some difficulty in mastication.

Examination at the time of admission had revealed purposeless movements of the eyes when the patient was looking in a lateral direction. The left pupil had been larger than the right. Speech had been slow and deliberate and the handwriting shaky. The right arm had been weaker than the left and the left leg weaker than the right. Rombergism had been present and the patient had been unable to walk alone. Some disturbance of pain sensation had been noted in the left forearm. The abdominal reflexes had been absent, the knee jerks exaggerated, patellar clonus present in the left leg and ankle, clonus present in both legs. Both Oppenheimer's and Babinski's reflexes had been present and bilateral. Both the biceps and the wrist jerks had been present and some spasticity had been noted in the limbs.

Dr. Adams said that a diagnosis of disseminated sclerosis had been made and that he had determined to treat the patient by the injection of malarial parasites. This had been done on May 19, 1927. The inoculation had been followed by a rigor and an intermittent temperature for some days. Malarial parasites had been found in the blood on May 25. By June 20 the patient had improved considerably. The spasticity and clonus had been much less and the gait much steadier and more regular. The patient's handwriting had improved and he had written

a full page letter on his own initiative. On June 30 a fresh inoculation with malarial parasites had been made and they had been recovered from the blood on July 8. Dr. Adams pointed out that the patient's improvement had been maintained and he was hopeful that still further benefit would be derived.

Unilateral Postencephalitic Tremor.

DR. G. C. WILLCOCKS showed a male patient, aged forty years, who complained of shaking in the right arm since 1919. He had been in hospital at that time with double vision, headaches and sleeplessness. The trembling of the right arm had begun while he was in hospital and had continued since. He had been delirious for some weeks at the time of his illness.

On examination the gait was fairly natural, the face was somewhat fixed in appearance, immobile and expressionless. The head was held stiffly and the right arm was as a rule flexed slightly. There was a definite tremor of the right hand and forearm. The right hand was usually partly closed, the fingers being flexed. The tremor increased on examination. The reflexes were all brisk, especially the knee jerks and a prolonged clonus had been obtained on dorsiflexion of the right ankle joint on one occasion. The plantar response was definitely flexor and it was assumed that this clonus was due to hypertonicity of the leg muscles similar to that in the right arm where it was associated with tremor.

The right arm appeared weaker than the left and was somewhat more rigid on manipulation.

At one examination stocking anæsthesia had been present.

The Wassermann test had yielded no response.

Dr. Willcocks said that the diagnosis lay between hysterical tremor and tremor due to a lesion affecting the *globus pallidus*. The history of headache with tremor coming on at the same time favoured an organic cause, as did the weakness, tremor, rigidity and facial appearance.

A lesion of the rubrospinal tract in the *tegmentum* of the *pons* or *crus cerebri* might cause tremor on the opposite side, but as a rule such lesions were associated with ocular palsies, hemiplegia or hemianæsthesia.

A thrombosis due to syphilis might give rise to such a condition, but encephalitis was a much more common cause of these appearances.

The *fundus oculi* was normal. The pupils were normal and the eye movements normal. The prognosis was poor as regards recovery. In regard to treatment reeducation might do good. Belladonna in large doses or hyoscine or bromides might be tried. Royle's operation was said not to relieve tremor in such cases.

Chronic Osteomyelitis.

Dr. Willcocks also showed a male patient who complained of a stiff neck and of pains in the right hip of two and a half years' duration. The first complaint had been due to a swelling on the left side of the parietal region of the skull and this had been followed in a day or two by pains in the neck and in the hips, especially the right hip. The patient had left hospital after nine or ten weeks on crutches and had gradually become more active, though he felt weak and still complained of pain. He denied having suffered from venereal disease or from any other illness of a serious nature. He stated that he had been quite well until the date of the onset of the illness two and a half years previously. He was rather thin and sallow. There was some impairment of movement in the upper cervical vertebræ with a bony projection in that region. The right femur was thick and tender in the upper and outer aspect of the shaft. There were no signs of disease in the lungs and the other systems were apparently clear. A positive result had been obtained to the Wassermann test, but as there was some doubt about the controls, it was probable that the test would have to be repeated. X ray examination had revealed no abnormality in the chest but signs of what was apparently chronic infective osteomyelitis had been found in the cervical vertebræ and in the femur. Syphilis was regarded as an unlikely cause of the condition. The patient was feeling much better and was not so stiff. If a second response to the Wassermann test were obtained, antisyphilitic treatment would be undertaken, but if no reaction were obtained, surgical treatment would have to be considered.

Hysterical Tremor of the Right Hand.

Dr. Willcocks also showed a man, aged fifty-one years. He had a tremor of the right hand and forearm which had been regarded as hysterical; there had been no previous illness such as might be associated with a cerebral lesion. The onset had been gradual. The condition had at first been rather like writer's cramp. It had begun ten years previously and the condition had not progressed. There was no sign of the gait, appearance or rigidity of *paralysis agitans*.

The right pupil was dilated and fixed and this had been regarded by the ophthalmic surgeons as due to old injury. Reflexes had been found normal and no other signs had been found except arteriosclerosis which had become more apparent since he had first been seen five years previously. No treatment had been of any avail. The patient had not helped the condition by indulging in copious libations to the God of tremors. It was possible that there was a lesion affecting the basal ganglia in such conditions which had been common among ex-soldiers.

Injury to the Ulnar Nerve.

DR. E. H. STOKES showed a female patient, aged twenty-two years, who stated that she had fallen on her left elbow four years previously. Twelve months after the accident she had noticed that she was unable to grasp objects strongly with her left hand. Her condition at the time of the meeting was probably much the same as it had been three years previously.

On examination a wasting of the muscles of the dorsum of the hand between the first and second metacarpal bones was noticed. There was diminished sensibility to heat, pain and light touch over the little finger, the medial side of the hand and the ulnar portion of the ring finger. The supinator and triceps reflexes were normal. She could perform all movements with the forearm, fingers and thumb. Her general condition was good. Two crowned teeth were noticed.

A skiagram had failed to disclose evidence of cervical rib on the left side. The left elbow and the crowned teeth had also been examined by means of X rays. No abnormalities had been found. The muscles of the hand and forearm reacted to the faradic current. The reaction to galvanism was also normal.

The newspaper test, described by Froment, to demonstrate weakness of the adductor muscle of the thumb was well exemplified in this patient as she was unable to hold the paper between the thumb and the forefinger when it was gently pulled away from her.

The weakness of the adductor muscle of the thumb and the associated anæsthesia were evidently due to an injury to the ulnar nerve some years previously.

Primary Anæmia with Splenomegaly.

Dr. Stokes also showed a woman, twenty-six years of age, who had been married nine years and had had six children. Five were living and one was dead. The youngest child was seven months of age. At the time of the last confinement there had evidently been a moderate *post partum* hæmorrhage. The patient complained that for the previous six years she had suffered from nervousness and palpitation. On examining her, the extreme pallor of her skin and mucous membranes was immediately noticeable. The edge of the spleen was palpable just below the left costal margin. There was no abnormality discovered on examining her heart and chest.

A full blood count had been performed with the following result:

Red blood cells per cubic millimetre ..	3,320,000
Hæmoglobin value	35%
Colour index	0·53
Leucocytes per cubic millimetre	6,300
Polymorphonuclear cells	62·5%
Lymphocytes	35%
Eosinophile cells	2·5%

There was slight poikilocytosis, anisocytosis and polychromasia. No nucleated red blood cells were seen.

The Price-Jones curve had not been plotted.

A fractional test meal showed an absence of free hydrochloric acid in all specimens.

A second blood count had been performed a week after the first. The result was similar to the first except that the percentage of eosinophiles was seven. On account of this eosinophilia, the tests for hydatid disease had been made. The intradermal test of Casoni had failed to elicit a response as did the complement deviation test (hydatid antigen) and the precipitin (hydatid) test. The blood serum had failed to react to the Wassermann test. The blood coagulation time was within normal limits. On account of the extreme anæmia her urine had been examined for hæmosiderin. None had been found. The Van den Bergh reaction had also yielded no reaction. The stools were examined microscopically. No blood, no mucus, no ova nor parasites were found. A skiagram of the chest showed that no tuberculous mottling was present.

During the fortnight that the patient had been under observation she had shown a definite improvement. She was being treated by means of arsenic and iron by the mouth.

Thrombo-angiitis Obliterans.

DR. J. HOETS showed a male patient, aged forty-five years, a labourer, who had been referred to the orthopædic out patient department for treatment of a painful foot. The patient was a Russian Jew, a heavy cigarette smoker and a moderate drinker. He carried a flask of brandy from which he sipped occasionally in order to relieve his pain. Up till three months before the meeting he had had no illness. At about that time he had knocked the dorsum of his foot against a fence, causing a slight abrasion of the skin. Following the injury pain in the great toe and in the anterior half of the foot had become increasingly severe until it was almost unbearable. When the foot was elevated it became almost as white as marble and the pain became easier. When the foot was in a dependent position the colour became changed, starting in the great toe and extending to the middle of the foot where there was an abrupt termination of the phenomenon. Starting with a pinkish tint the affected part gradually became a purplish red until with a yell of pain the patient suddenly elevated the foot and the colour faded. No pulsation could be felt in the *dorsalis pedis* or the *tibialis posterior* arteries. In the opposite foot the pulsation in these vessels could be detected. There had lately been occasional darts of pain in the good foot. Dr. Hoets regarded the condition as *thrombo-angiitis obliterans.*

Spondylitis Deformans of the Lumbar Vertebræ.

Dr. Hoets also showed a male patient, aged thirty-five years, a labourer, who had inadvertently stepped into a trench about eighteen inches deep ten months previously while carrying a heavy piece of stone. The weight in his arms had caused him to drop the stone and severe pain had been experienced in the lumbar region. He had come under observation in the orthopædic out-patient department about six months after the accident. The patient had walked with a pronounced forward bend and with flexion to the left at the lumbar region of the spine; no definite kyphosis was present. Severe sciatic pain was present in the left side. X ray examination revealed arthritic changes in the lumbar region of the spine with a well developed curve. The patient had been admitted under the care of Dr. George Bell and by his courtesy the following treatment had been carried out. The patient had been placed on a fracture bed and had been encouraged to lie on his back for as long periods as he could endure. As he had become comfortable in this position, pads and then sandbags of gradually increasing thickness had been introduced under the lumbar region of the spine. This area had been treated daily by diathermy. At the end of three months the lumbar region had been flat and the patient could stand erect. The sciatic pain had gradually disappeared. The patient was fitted with a celluloid jacket and was able to get about with comfort.

Scoliosis.

Dr. Hoets also showed a female patient, aged twenty-two years, who suffered from scoliosis of the cervico-dorsal region and was undergoing correction by successive plaster jackets of the Minerva type. She had always been round shouldered and twelve months previously had been noticed to be getting worse. She had been suffering from goitre and about this time had been operated on. After she left the hospital the curvature had gradually got worse. It was demonstrated by a series of X ray photographs that gradual correction was taking place. The patient's height had increased by 6·25 centimetres (two and a half inches) in six months. There had been considerable improvement in the patient's general condition and the pain had practically disappeared.

Photomicrographic Cinematograph Films.

Four very interesting cinematograph films were exhibited on a screen by DR. GEORGE R. HAMILTON. He said that these films were wonderful examples of microphotography and all the more so because they were moving pictures taken of a dark ground field by the ultra-microscope.

Films of *Spirochætæ pallida* were shown. This film showed all the characteristic movements of the spirochæte, its size compared to normal blood cells *et cetera.*

Another film was that of the blood of a rat suffering from *Trypanosomiasis lewisi.* The trypanosomes were most instructive and amusing to watch. The elasticity of the blood cells was clearly shown as they were bumped about by the swimming infusoria.

The spirochæte of relapsing fever was also shown. That part of the film taken just before death clearly showed how the patient's blood simply teemed with the spirochætes.

The last moving picture was that of hæmolysis, demonstrating the bursting of the cells. One large white cell showed in a very clear manner when it burst the liberation of its granular contents.

Dr. Hamilton laid stress on the necessity for the use of the cinematograph by the medical schools for teaching purposes.

Dermatological Conditions.

DR. LANGLOH JOHNSTON showed a woman who was suffering from von Recklinghausen's disease with pigmentation. He also showed a woman who was suffering from extensive *lupus erythematosus.*

Skiagrams.

DR. J. G. EDWARDS and DR. W. A. EDWARDS showed a series of interesting skiagrams.

Medical Societies.

THE MELBOURNE PÆDIATRIC SOCIETY.

A MEETING OF THE MELBOURNE PÆDIATRIC SOCIETY was held at the Medical Society's Hall, East Melbourne on June 29, 1927, DR. W. W. MCLAREN, the President, in the chair. The meeting was held in conjunction with the Radiological Section of the Victorian Branch of the British Medical Association.

Chest Conditions in Children.

DR. HERBERT M. HEWLETT read a paper entitled: "The Interpretation of X Ray Films of the Chest in Children" (see page 318).

DR. COLIN MCDONALD read a paper entitled: "The X Ray Diagnosis of Foreign Bodies in the Air Passages and Œsophagus" (see page 319).

Dr. McDonald also showed some skiagrams which had been taken from a little boy, aged four years, and discussed the significance of the findings. The child's physical signs and symptoms had suggested right bronchial occlusion. The only previous history, pertaining to such

a condition and elicited after much interrogation, was that some five months previously whilst away from home he had had a fit of choking after eating peanuts. Films exposed at full inspiration failed to reveal any opaque foreign body or any extrabronchial disease that might cause bronchial compression. The lung fields were clear. Films taken carefully both at full inspiration and full expiration revealed (i) relative increased translucency of the right lung field at full expiration compared with that on the left side, (ii) limitation of the diaphragmatic excursion, (iii) flattening of the right diaphragmatic dome at expiration while the left dome rose normally, (iv) displacement of the heart and mediastinum to the unaffected side at expiration. Dr. McDonald said that these signs had been interpreted as indicating an acute, obstructive, unilateral, expiratory emphysema. In the absence of any evidence of extrabronchial compression the foregoing findings suggested the presence of a non-opaque foreign body in the right main bronchus lying between its first division and the tracheal bifurcation and producing only expiratory obstruction. No lung changes such as atelectasis or drowned lung appeared to have supervened. That the foreign body lay in a bronchus and not in the trachea was indicated by the unilateral distribution of the signs. That it lay in the main bronchus and not in the secondary bronchus or a bronchiole was shown by the fact that the whole of the right lung field shared in the relatively increased translucency at expiration. The diagnosis had been confirmed when a peanut kernel was removed with the aid of the bronchoscope from the right main bronchus. Films taken after removal of the foreign body showed that the appearances of the thoracic contents at both inspiration and expiration were normal. Dr. McDonald said that it might legitimately be asked why, with a vegetable foreign body of such toxicity as a peanut in the air passages of a young child, the child had not died nor had any pathological changes been revealed on the film. The explanation advanced was that the peanuts eaten were of a specially hard-baked variety. This hard baking had provided a tough protective coating which had prevented rapid disintegration and solution of the toxic peanut kernel and had delayed the onset of that highly dangerous laryngo-tracheo-bronchitis which as a rule rapidly terminated the life of a young child.

DR. DOUGLAS GALBRAITH read a paper entitled: "Hilus Tuberculosis in Children" (see page 322).

DR. D. M. EMBLETON read a paper entitled: "Chronic Chest Conditions in Children other than Tuberculosis" (see page 325).

DR. REGINALD WEBSTER demonstrated a number of pathological specimens illustrating most of the conditions discussed in the previous papers. These included an example of hilus tuberculosis, showing a well-defined subpleural nodule in the lung and secondary involvement of the immediately related hilus glands.

Dr. Webster agreed that in most cases this condition was in accord with the teaching of Ghon, but some revealed no actual lung focus although the hilus glands were grossly involved.

The other specimens included a malignant tumour of the thymus, Hodgkin's disease of the mediastinal glands, unresolved bronchopneumonia in an infant, bronchiectasis due to a form of spirochæte with metastases in the brain and forearm, malignant disease of the lung secondary to sarcoma of the testis and an example of septic infarction of the lung due to pyæmia following osteomyelitis.

DR. H. DOUGLAS STEPHENS congratulated the readers of the papers on their excellent presentation of the various aspects of the subject under discussion. He was very impressed with the definite radiological appearances produced by a non-opaque foreign body in the air passages.

The child referred to by Dr. McDonald had had the screw present in the lung for two years. There had been a chronic cough with no expectoration and no fever, but the growth of the child was greatly diminished. On bronchoscopic examination an abscess cavity had been opened and the screw was removed. Fourteen months later the child had been apparently well and X ray examination had revealed practically no abnormality of the chest.

In his opinion the surgical tuberculosis seen in Australia was mainly of human type and the more they inquired into the history the more often they elicited information as to contact with open pulmonary tuberculosis.

Dr. Stephens considered the von Pirquet test was an exceedingly helpful means of diagnosis, but it required careful interpretation and the test often had to be repeated. Later inoculations of old tuberculin were very helpful.

DR. H. FLECKER advocated a closer correlation between the radiological findings *ante mortem* and the condition found at autopsy.

DR. H. BOYD GRAHAM considered that the injections of old tuberculin were of value in the diagnosis of chronic bronchitis in children. He asked whether the radiologists could suggest any further methods that would be of assistance in diagnosis.

DR. R. L. FORSYTH said that he had always been interested in the subsequent history of these children with enlarged bronchial glands and he had followed up many of them for years in the Out-Patients' Department. He was quite satisfied that many recovered completely and became well and strong. If some of these were originally tuberculous then the prognosis was hopeful, but they should all be treated as possibly tuberculous in the first place.

DR. R. R. STAWELL considered that the usual course of the pathological changes was a primary subpleural nodule, extension along the peribronchial lymphatics and then involvement of hilus glands. He asked whether this could be demonstrated by radiological methods.

With reference to the later results he confirmed Dr. Forsyth's view that the majority of patients manifested a gradual improvement, once they passed the vulnerable age. If during this period the general conditions were good, then these patients did well, but if under poor conditions, for example in the war period, then they often progressed and became definitely tuberculous.

THE MELBOURNE HOSPITAL CLINICAL SOCIETY.

A MEETING OF THE MELBOURNE HOSPITAL CLINICAL SOCIETY was held at the Melbourne Hospital on June 24, 1927, MR. VICTOR HURLEY, the President, in the chair.

Vesical Diverticulum.

MR. W. ALLAN HAILES showed a female patient, aged thirty-four, who had had a history of bladder irritation for the previous five years. She had complained of pain, frequency, occasional hæmaturia and stoppage of the stream at times during the act of micturition. There had been constant pain over the lower part of the abdomen and a sense of weight in this area. Exercise and jolting made this pain worse. Urine examination had revealed a specific gravity of 1020, acid reaction, no albumin, no sugar, a few pus cells and some epithelial cells.

On examination tenderness had been present just above the pubis. Cystoscopy had revealed a diverticulum about 1·25 centimetres (half an inch) above the left ureteric opening and patches of chronic inflammation on the bladder wall. The opening of the diverticulum had been 1·25 centimetres in diameter. Cystography, carried out according to the technique advised by Young, had revealed a diverticulum about five centimetres (two inches) in diameter in its lower portion with a superior loculus about 2·5 centimetres (one inch) in diameter, Mr. Hailes showed films with the bladder full and with the bladder empty. The diverticulum could be seen clearly in the latter.

At operation the bladder had been distended with lotion (20% solution of sodium bromide), a left paramedian subumbilical incision had been made and the bladder exposed. The bladder had been opened, a finger passed into the diverticulum and a catheter passed into the left ureter. The diverticulum had been exposed and was seen to be composed of mucous membrane only, the muscular wall of the bladder ending quite definitely at the neck of

the diverticulum where it surrounded the neck in a circular manner. The diverticulum had then been freed, the catheter safeguarding the ureter and then it had been excised. The mucosa had been sutured from within the bladder and the muscular coat sutured from outside with a double layer of sutures. The bladder had been closed, a self-retaining catheter being inserted through the urethra and a small drain left down to the suture line in the muscle.

As regards the ætiology Mr. Hailes pointed out that as this case was that of a female the element of obstruction did not enter into the picture and, further, diverticula were rare in the female. It seemed to be very definitely congenital in origin and corresponded to the older designation of "congenital diverticulum." Possibly it had had its origin from a bud of the Wolffian duct. He asked for the opinion of members present as to whether intravesical removal would have been better or not.

DR. J. T. TAIT said that this case was very interesting as it occurred in a woman and lent much support to the congenital theory of the origin of these diverticula. All that he had seen had had only mucous membrane and perivesical tissue round that. Another interesting feature of this case was the slight infection that was present. He considered that a 10% solution of sodium bromide was a more suitable lotion to use, because it gave a good shadow and did not cause so much reaction. Strangely enough a solution that could be used safely in the renal pelvis caused much reaction in the bladder.

DR. LESLIE spoke on the latest work on the development of the bladder and ureters. He had seen large diverticula in five month fœtuses.

Fibrositis Treated by Diathermy.

DR. W. KENT HUGHES showed a boy of nineteen years who six years previously had developed difficulty in walking and his mother had noticed that his abdomen was becoming hard. When seen about six months previously the sheaths of many of his muscles had been very hard, those of the *rectus abdominis* and of the hamstrings being most affected, although the sheaths of the muscles at the lower end of the spine were also involved. The boy had been bent almost at a right angle and the neck had been quite stiff. For the previous four or five months he had been having diathermy six times a week and at the time of demonstration could almost touch his toes. There was still much thickening of the sheaths of the hamstrings and of the *rectus abdominis*, but the sheaths of the other muscles were much better. Dr. Kent Hughes expected much further improvement and suggested cutting the sheaths of the hamstrings. The tonsils had been removed three years previously and, although his general health had improved since then, the contraction had gone on until diathermy had been commenced.

Spastic Paraplegia.

DR. GEOFFREY PENINGTON presented a case of spastic paraplegia occurring in a man of forty-two years of age. The history was that thirteen years previously and shortly after his marriage he had first noticed some difficulty in walking in the nature of a tendency to drag the feet and a gradually progressive feeling of stiffness associated with frequency of micturition and difficulty in controlling the act. All the symptoms had steadily progressed without any suspicion of remission or acute exacerbation until at the time of the meeting there was almost complete loss of control of bladder and rectum and typical spastic gait with definite adduction of the lower limbs.

There was no history of an acute febrile disturbance or injury. Family history showed that the wife was in good health and had had four pregnancies, the first resulting in a child who lived eight hours, the second in a miscarriage late in pregnancy, the next in a child who died at eight years from an acute febrile illness, and the last in an apparently healthy child.

Examination of the cardiovascular, respiratory, alimentary systems revealed no abnormality and the result of urine examination was normal. Neurological examination revealed no evidence of affection of the cranial nerves, no nystagmus or staccato speech, no tremor of the upper, but a coarse tremor in the very spastic lower limbs on attempting voluntary movement, with weakness of the latter. The ocular fundi were normal. There was no evidence of muscular wasting, the electrical reactions were normal. The tendon reflexes were considerably exaggerated and uniformly so, ankle and patellar clonus being easily elicited; a typical Babinski response occurred on plantar stimulation. The superficial abdominal reflexes were present in the upper portion of the abdomen, but were not elicited in the lower. Sensory changes were present, namely some delay in the recognition of light touch, but with accurate localization; slight inaccuracy in the discrimination of two points and definite inability to discriminate between hot and cold applications as estimated with glass test tubes. All these changes were present in both upper and lower limbs, but predominantly in the lower and no definite level of change could be ascertained. Joint sensation and recognition of painful stimuli were apparently normal, but there was complete loss of sense of vibration in the lower limbs. The cerebrospinal fluid was not under increased pressure and manifested no increase in cells or globulin and did not react to the Wassermann test. The blood serum yielded no response to the Wassermann test. X ray examination of the spine revealed a mild degree of spondylitis and after injection of "Lipiodol" into the *cisterna magna* showed the fluid to be at the level of the second sacral segment.

It appeared to him that the condition was in the nature of chronic progressive disseminated sclerosis of the spinal type or a syphilitic lesion of the nervous system with failure of reaction to the Wassermann test and was presented for opinion as to diagnosis and treatment.

DR. H. F. MAUDSLEY said that in the very advanced cases of disseminated sclerosis there were sensory changes. Another investigation that was worth doing was a blood count and a test meal, although with a long history as in this case he would expect the anæmia to be obvious, if it were a case of subacute combined degeneration of the cord. He did not think that any treatment was of use, but that "Novarsenobillon" should be tried as it might help to make the remissions more pronounced. If the condition were one of subacute combined degeneration, then treatment should be directed to that.

DR. F. BLOIS LAWTON suggested massage and general muscle reeducation if the condition were one of disseminated sclerosis as he had found this useful in his own patients.

DR. LESLIE HURLEY said that on the evidence it could not be assumed that there was present more than a slowly progressive lesion of the posterior and lateral columns. It was most unusual for a case of disseminated sclerosis of thirteen years' standing to show no signs indicative of lesions in the upper parts of the central nervous system and to have manifested no remissions. Again a case of subacute combined degeneration of the cord of even five years' standing was very rare and then would certainly manifest anæmia and in these patients the superficial abdominal reflexes did not disappear even when the spasticity was pronounced.

He considered that the diagnosis that could not be excluded was that of syphilis of the central nervous system. All cases of syphilitic disease of the cord were not accompanied by changes in the fluid and in only 70% to 80% was a Wassermann reaction obtainable. The history was that of a slow progression in the symptoms so that intravenous administration of arsenic might be worth trying. He had had experience of a similar case which had remained stationary for four years after the use of "Novarsenobillon." But he did not anticipate any improvement in the symptoms of Dr. Penington's patient on account of the long standing of the condition.

Paroxysmal Hæmoglobinuria.

DR. C. KELLAWAY demonstrated a classical case of paroxysmal hæmoglobinuria. The patient was a male, aged fifty-one years, who for a number of years in the cold weather had suffered from attacks of shivering with numbness of the hands and feet and a sensation of bodily

weakness followed by the passage of urine of a port wine colour. He had been admitted on May 30, 1927, during such an attack and his urine had contained much coagulable protein and blood pigment. There was no history of syphilis, but the result of the Wassermann test was strongly positive. The urea concentration test gave a normal result 2·0% in the second and third hours and the blood urea was 60 milligrammes. The systolic blood pressure was 160 and the diastolic pressure 80 millimetres of mercury. His blood, examined a fortnight after the last atttack, had contained no complement, but specific hæmolysin had been readily demonstrated. For this purpose a sample of the patient's blood had been obtained and allowed to clot at 37° C. The serum put up with a suspension of his own red corpuscles and with those of a normal person first exposed to cold and then incubated had failed to produce hæmolysis but readily did so under the same conditions when guinea pig serum containing complement was added. Suitable controls demonstrated that this last serum had by itself no hæmolytic action on human red cells in the concentration employed.

Trismus, Probably Functional.

DR. F. BLOIS LAWTON showed a woman, aged thirty-nine years, who had always been quite healthy until May 29, 1927, when she was admitted to the Women's Hospital with an incomplete abortion. She stated that no instrument of any kind had been used prior to her admission to hospital. Four days after her admission to the Women's Hospital she had developed trismus which became worse. She had been admitted to the Melbourne Hospital on June 5, 1927, on the third day of the trismus with a normal temperature, a pulse rate of 80 and a respiratory rate of 20. The mouth had been completely closed but there had been no pain and the patient had looked quite well. There had been slight stiffness of the neck and examination of the central nervous system had revealed nothing abnormal. On June 5, 1927, two carious teeth had been extracted under general anæsthesia and the gag left in the mouth for six hours; that evening the patient had been able to open the mouth easily. However the next day the stiffness had returned and on June 8, 1927, antitetanic serum had been given, twenty cubic centimetres intramuscularly and twenty cubic centimetres intrathecally. The temperature had risen to 37·8° C. (100° F.) but had fallen on the next day, although the stiffness of the jaw remained until June 17, 1927, when a large clot forming a cast of the uterus had been passed. Since then the stiffness of the jaw had diminished and at the time of demonstration the jaw could be moved freely. X ray examination of the temporo-mandibular joints had revealed no abnormality. Dr. Lawton considered that the condition was one of functional trismus.

Auricular Fibrillation.

DR. L. E. HURLEY showed a male patient, aged thirty years. The family and past history were entirely normal. For the previous six years he had noticed that his heart had been beating irregularly but as he had had no other symptoms had not sought medical advice. About nine months previously during the course of a routine examination of railway employees his pulse had been found to be grossly irregular. He led an active life and had no shortness of breath nor any other symptoms.

On examination the pulse had been quite irregular and the rate had varied between 80 and 120. There was no cardiac enlargement but a systolic thrill had been present at the apex and the second sound was accentuated at the aortic area. The highest recorded blood pressure had been 130 and the diastolic 90 to 100 millimetres of mercury. The arteries were slightly thickened. The specific gravity of the urine was 1018, it was acid and contained no albumin and no sugar. The fundi were clear.

Dr. Hurley showed electro-cardiagraphic tracings.

On May 4, 1927, the patient had been given a test dose of 0·2 gramme of quinidine and on May 5, 1927, had started on 0·4 gramme every four hours day and night. After the fifth dose the pulse had suddenly become regular. He had then been given 0·2 gramme three times a day for a fortnight and then the same dose twice a day.

Further tracings were shown and it was obvious that the heart was regular. The systolic blood pressure had risen to 180 and the diastolic to 110 millimetres of mercury.

Dr. Hurley regarded the case as possessing the following points of interest:

(1) The duration of the fibrillation, the recorded limits being six days and fifteen years with an average period of two years.

(2) How the question as to the fibrillation *per se* affected the circulation.

Dr. Hurley pointed out that the existence of fibrillation for six years without any symptoms of cardiac failure was most unusual. He had also seen a patient with auricular fibrillation who, when normal rhythm had been established by the use of quinidine, had not been so well as he had been when the fibrillation had been controlled by digitalis. In another patient with a rapid pulse and sypmtoms of cardiac failure treatment had produced very little response, but on the supervention of fibrillation digitalis had produced a definite improvement and the patient had been much better than when the cardiac rhythm had been normal. These observations in his opinion tended to show that fibrillation, if controlled by digitalis, had very little effect on the efficiency of the circulation.

A search of the literature had revealed the fact that sudden deaths were not very rare during the administration of quinidine for auricular fibrillation. In one series of 265 collected cases there had been eight sudden deaths and Levine in 37 cases had had three. This, with the very slight benefit resulting from the reestablishment of the normal rhythm, suggested that in his opinion quinidine was indicated for a very small percentage of patients with auricular fibrillation. He had seen a number of patients between the ages of twenty and thirty with systolic blood pressures of about 180 millimetres of mercury in whom there had been no signs of myocardial or renal inefficiency. He had been unable to decide what prognosis to give in these cases. In the patient presented he thought it probable that the high blood pressure and the fibrillation were due to the same cause which as yet had not been determined.

Dr. Hurley asked for expressions of opinion on (i) the indication for the use of quinidine in auricular fibrillation; (ii) the outlook in young adults with a systolic blood pressure of 180 millimetres of mercury; (iii) the other management in the patient presented.

DR. DOUGLAS THOMAS considered that there was no need to continue the quinidine; in fact it would be interesting to discontinue it and see what happened. He thought arteriosclerosis was often associated with auricular changes and that as there was a large reserve of renal function the diminution in renal function was not obvious.

DR. F. BLOIS LAWTON agreed with Dr. Hurley as to the indications for the use of quinidine. He quoted one patient under his care whose condition was of rheumatic origin with mitral stenosis and severe heart failure. The patient had been treated in the out patient department for some months with digitalis with improvement. The patient had then been admitted and the normal rhythm had been established in three days with quinidine and had been maintained for nine months during which time the patient was much more comfortable.

MR. VICTOR HURLEY remarked on the high blood pressure and suggested that as the eyes were rather prominent the thyreoid was possibly at fault.

DR. LESLIE HURLEY thanked the speakers and said that he would have the basal metabolic rate determined and thought that it would be raised, although the pulse rate was only seventy. He would report later.

Pulmonary Abscess.

DR. DOUGLAS THOMAS showed a man, aged thirty-seven years, with a history of a cough for two years. Previous history had been normal except for the fact that he had had a chancre six years previously and the Wassermann

test had yielded a reaction at the time that the cough started. After treatment a year previously no reaction had been obtained. On one occasion a year previously he had coughed up some bright blood. The sputum had been muco-purulent and streaked with blood. No tubercle bacilli had been found and the quantity had been about 150 cubic centimetres (five ounces) a day. Tests for hydatid disease had yielded no reaction. The X ray films showed that the right chest was dull from apex to base, the posterior mediastinum was dull in the lower two-thirds, but the heart was not displaced.

DR. L. J. CLENDINNEN spoke on the radiographic appearances. The pleura was grossly thickened, the heart and great vessels and the trachea were displaced to the right, the area of dulness persisted in all views, there was no free fluid and the costo-phrenic angles were clear.

Dr. Thomas said that it was intended to inject "Lipiodol" and to obtain further information. He would report later as to the findings.

MR. MERVYN STEWART said that in view of the work that Dr. S. Paterson had done in the Walter and Eliza Hall Institute on syphilitic infection of lungs the possibility of this case being such should not be lost sight of.

MR. VICTOR HURLEY stressed the necessity of excluding the presence of a chronic empyema.

THE MEDICAL DEFENCE ASSOCIATION OF SOUTH AUSTRALIA.

PRESENTATION TO DR. H. SWIFT.

A MEETING of those members of the Medical Defence Association of South Australia who subscribed towards the presentation of a piece of plate to Dr. H. Swift on his retirement from the office of President of that Association was held at the Adelaide University on Tuesday, August 9, 1927. DR. H. SIMPSON NEWLAND, the President of the Medical Defence Association, occupied the chair.

DR. NEWLAND said that they had met to do honour to Dr. H. Swift who had for so many years associated himself most honourably with the destinies of the Medical Defence Association of South Australia. Indeed he might almost be said to have been its destiny. He was not the father of the Association, though Dr. Newland fancied it was a matter of regret to him that he had to deny the paternity. The Association had at first been a delicate nursling. Many had failed to recognize its legitimate claim to support and that perhaps was one reason why it had become in the early 'nineties temporarily defunct.

It was then that the activities of Dr. Swift had become almost divine, for had he not raised it from the dead? Since then except during a visit to the land of his birth Dr. Swift had been President of the Association and had worked unceasingly in the interests of all the members. It was not always realized, when so much of the work was done *in camera*, what a vast amount of care and thought this had involved. Dr. Newland was afraid that Dr. Swift must sometimes have felt his task was a thankless one. He could, however, assure Dr. Swift on behalf of those present that his efforts had been genuinely and sincerely appreciated. He did not know whether Dr. Swift had settled in Adelaide by accident or design, but in either event it had been a happy day for the medical profession. South Australia and Adelaide in particular had had the signal advantage of the presence in practice of men who had come from the "old country" and inculcated the highest standards of professional honour and unity. Now that Australian graduates were tending more and more to fill the high places as the fine old pioneers passed on, let them strive to maintain the lofty level of their example.

It was said that pleasant associations clustered most thickly around the sense of smell and so in presenting their retiring President with a rose bowl and salver as a mark of their esteem, Dr. Newland ventured to hope that whenever throughout the serene and bright years to come he enjoyed the scent of a rose, he might recall with pleasure and pride the expression of gratitude and good fellowship.

Dr. Newland then made the presentation.

The presentation consisted of an extremely handsome silver rose bowl and of a silver salver. These pieces of plate were designed and manufactured by Hardy Brothers, of Melbourne and Sydney. Each piece bore the following inscription:

> To Dr. H. Swift from the Members of the Medical Defence Association of South Australia in grateful recognition of long and distinguished service. July, 1927.

DR. H. SWIFT who was received most warmly, said that he was one of the proudest men in the world at that time and one of the most embarrassed. He had always considered it a very difficult matter to express thanks gracefully and sincerely. He had been cursed all his life by being possessed by a devil, a devil of nervousness and shyness, that he had never been able to exorcise. But in his endeavours to cloak or hide this devil, he had often annoyed his friends by putting on an abrupt, not to say rude, manner and had been accused of putting on side and swagger. He well remembered that soon after his arrival in South Australia in 1887—forty years previously—he had irritated his friend Dr. Giles in this way and Dr. Giles had asked him to call and see him. Dr. Giles had at that time been living in a small house on the west side of Victoria Square and he had taken on himself to talk very straightly to him (Dr. Swift) on that point, telling him that he was annoying many of his medical *confrères* by his swagger and side and that he would do no good in Australia, unless he very much altered his ways. Dr. Swift supposed that it had done him good, although his unfortunate habit was entirely due to his devil. However, he must somehow have got round his *confrères*, for in seven years he had been President of the Registered Medical Practitioners' Association and in ten years had been President of the South Australian Branch of the British Medical Association. Still, whenever he had to get on his hind legs to address an audience, he was never sure how his devil was going to behave and whether he would be attacked by stage fright and everything be a blank. So lest he should forget—as had been reported of a well-known politician that when he was put up on one occasion to propose a vote of thanks to His Royal Highness the Prince of Wales he had been so carried away with his own egotism and verbosity that he had sat down without coming to that topic at all—he wished to thank them from the bottom of his heart for the really magnificent presents that they had given him that night. It was all too wonderful and he feared that his expression of thanks fell very short of his feelings. But he had been afraid that his devil would prevent him thanking them gracefully and would make him make a mess of it. He asked those present to believe him when he said that he was most profoundly grateful and very deeply appreciated the honour they had done him in making him that most beautiful present. He felt that he owed a special vote of thanks to Dr. Newland, their President, for he had a pretty certain suspicion that Dr. Newland had initiated the idea of the presentation and had taken immense pains to carry it out. That this should be so, was doubly pleasing to him, for Dr. Newland had ever taken the keenest interest in the welfare of the Association and had always expressed his appreciation of his (Dr. Swift's) poor efforts. He had always looked on Dr. Newland as a wonder child. They all knew the old story of the wonder child of the old duchess, so he would not inflict them with it, but if he might presume to offer any advice to the younger members of the Association he would advise them to try to learn from Dr. Newland the secret of the origin of his species and then to go and do likewise.

Dr. Swift then gave a short *résumé* of the early days of the Association which had been started in December, 1899, when he was elected the first President. Prior to this there had been another association, called the Association of Registered Medical Practitioners of South Australia, formed in 1888, but this had gone into recess in 1896.

Dr. Swift went on to say that he was a proud man and felt that he had every right to feel proud in the knowledge that at the end of his medical career he had done something during his life for his profession and for the good of his fellow members that had merited a reward of such magnitude. He thanked them.

Obituary.

NORMAN DOWLING.

WE regret to announce the death of Dr. Norman Dowling, which occurred at Young, New South Wales, on August 16, 1927.

ANDREW JOHN BRADY.

WE regret to announce the death of Dr. Andrew John Brady which occurred at Sydney on August 25, 1927.

Correspondence.

IDIOPATHIC NARCOLEPSY.

SIR: In his very interesting contribution on idiopathic narcolepsy in the Journal of the twentieth August Dr. Bostock says that "Any disease the study of which promises to shed light on the inwardness of that universally experienced but little understood entity, sleep, is worthy of special study."

By the same mail which brought the Journal I received a letter from an officer of the North-west Frontier Patrol, India, which may interest Dr. Bostock.

> From 10,000 to 16,000 feet and back in a day doesn't sound much perhaps, but as a test of heart and lung it will suffice. This yesterday—I did the climb in 2 hours and 50 minutes. I got there first by a quarter of a mile. It was strange, for while I was on the move my breathing, though strenuous, was regular, but when I reached the summit of the pass my breathing became most erratic. Normal for a while, then a feeling that I was not getting enough air—then a burst of six deep inhalations at a rate of about two hundred a minute. This lasted for the best part of an hour. I was still doing it when I awoke. For no sooner had I sat down to look about me than I felt terribly sleepy. I couldn't have kept awake to save my life. I lay myself down on a heap of stones and slept. When I awoke the rest of my party had arrived. They were all sound asleep just scattered about on the stones.

His letter then describes a further advance into Afghanistan to inspect a certain track describing his symptoms thus:

> but I was tired! A dozen times I was tempted to turn back in the first half mile but managed to keep going and then on my way back to the top I wouldn't have cared much if all the snow on the Hindu Kush had enveloped me.

He does not complain of headache, vomiting or other symptoms of soroche or mountain sickness as described by Whymper in the ascent of Chimborazo at an altitude of 16,664. In a less aggravated form such symptoms may present themselves at much lower levels. The hyperpnœa, in "bursts" as he describes it, points more to CO_2 stimulation due to the excessive exertion from climbing, but that point I would prefer to leave to the physiologists to decide.

Here we have a whole party of trained athletic soldiers suffering from the same symptoms of tiredness and sleepiness, symptoms closely allied to those in the case reported by Dr. Bostock except that in Dr. Bostock's case there was no alteration of the respirations.

Yours, etc.,

W. A. T. LIND.

Kew, Victoria.
August 23, 1927.

THE RADIATION TREATMENT OF EXOPHTHALMIC GOITRE.

SIR: In your report on the discussion of the treatment of exophthalmic goitre at the recent Australasian Medical Congress at Dunedin which was published in THE MEDICAL JOURNAL OF AUSTRALIA of August 13, Dr. Stawell states "that the X ray treatment of this disease is a time-consuming and time-wasting process, doubtful as to effectiveness. . . . In the cases that are or used to be considered a real 'surgical risk,' I have not seen X ray treatment produce any good result, but the delay associated with its ineffective use has raised the 'surgical risk' which has had to be taken later."

During the last five years Dr. Nisbet and myself have treated over sixty cases of exophthalmic goitre by means of intensive X ray therapy and have come to the conclusion that this method of treatment is just as successful as any surgical measure. Most of the cases which we have treated by this method have been considered "surgical risks."

There have been two fatalities, one a girl, aged twenty-two years, who was "*in extremis*" when first seen. Within four weeks of the treatment the pulse had dropped from 180 to 120 and unfortunately at this time, an attack of pyelitis and gastroenteritis supervened, from which she died.

The second fatality was a girl, aged about seventeen years, who was in a moderately advanced stage and died before completion of the treatment. With these two exceptions the results have been excellent.

The first case treated, consulted me only a week ago. His original symptoms were very well marked, the pulse rate being over 160. There was a very marked degree of exophthalmos and all the other symptoms associated with this disease. Within six months he was able to carry out all work on his farm and at the present time is in my opinion a cure. After walking up a fairly steep hill, about five hundred yards long, his pulse rate was 80 and three minutes later was 68. I quote this case as an example of the results of intensive radiation therapy.

There are a few cases who have shown a well defined improvement in the general condition, but are not completely cured and I have no doubt a further application will bring about the desired result.

Our method occupies in all about a month from the time of commencing the treatment until the patient can resume work. We give about four hours' treatment in divided doses over fourteen days. The improvement usually commences within a few days of the termination of the treatment.

We have heard a great deal from the surgeons about X ray damaging the skin and causing fibrosis and making the surgeon's task difficult. None of our cases have yet to my knowledge been operated on and every one whom we have subsequently examined, has had a perfectly soft and pliable skin and shows no sign of any induration or telangiectasis. I have not seen any cases of myxœdema amongst our series.

I have no doubt that X ray has probably been brought into disrepute by the administration of numerous light filtered low voltage applications and in many of these cases the only effect of X ray has been serious damage to the skin and in some cases has caused burns.

In my experience X ray is absolutely useless in any form of goitre except the exophthalmic type and in some cases of toxic adenoma, where the toxic symptoms alone are relieved.

Yours, etc.,

B. L. W. CLARKE.

"Lauriston," Wickham Terrace,
Brisbane, August 23, 1927.

Proceedings of the Australian Medical Boards.

VICTORIA.

THE undermentioned has been registered, under the provisions of Part I of the *Medical Act* 1915, of Victoria, as a duly qualified medical practitioner:

Michaels, Samuel Nathaniel, M.B., B.S., 1925 (Univ. Melbourne), 18, View Street, North Perth, Western Australia.

QUEENSLAND.

THE undermentioned have been registered under the provisions of *The Medical Act of* 1925, as duly qualified medical practitioners:

Pearce, Thomas Russell, M.B., 1925, Ch.M., 1927, D.P.H., 1926 (Univ. Sydney), Australian Institute of Tropical Medicine, Townsville.

Hemsted, Rustat Henry, M.R.C.S., 1893 (Eng.), L.R.C.P., 1893 (Lond.), Brisbane.

Speeding, Keith Rennick, M.B., B.S., 1925 (Univ. Melbourne), Brisbane.

Stafford, Basil Frederick Roberts, M.B., B.S., 1924 (Univ. Melbourne), Toowoomba.

Bostock, John, M.R.C.S., 1913 (England), L.R.C.P., 1913 (London), M.B., B.S., 1914 (London), Brisbane.

Books Received.

AN X-RAY ATLAS OF THE NORMAL AND ABNORMAL STRUCTURES OF THE BODY, by Archibald McKendrick, F.R.C.S. (Edinburgh), D.P.H., F.R.S.E., and Charles R. Whittaker, F.R.C.S. (Edinburgh), F.R.S.E.; Second Edition, Revised and Enlarged; 1927. Edinburgh: E. and S. Livingstone. Demy 4to., pp. 272.

EXERCISES FOR WOMEN: BEING AN ABBREVIATED EDITION OF SEX AND EXERCISE, by Ettie A. Hornibrook; 1927. London: William Heinemann (Medical Books) Limited. Royal 8vo., pp. 55, with illustrations. Price: 3s. 6d. net.

Diary for the Month.

SEPT. 6.—Tasmanian Branch, B.M.A.: Council.
SEPT. 7.—Victorian Branch, B.M.A.: Branch.
SEPT. 7.—South Sydney Medical Association, New South Wales.
SEPT. 7.—Western Australian Branch, B.M.A.: Council.
SEPT. 8.—Victorian Branch, B.M.A.: Council.
SEPT. 8.—South Australian Branch, B.M.A.: Council.
SEPT. 8.—New South Wales Branch, B.M.A.: Clinical Meeting.
SEPT. 9.—Queensland Branch, B.M.A.: Council.
SEPT. 9.—Central Southern Medical Association (Goulburn), New South Wales.
SEPT. 13.—Tasmanian Branch, B.M.A.: Branch.
SEPT. 13.—New South Wales Branch, B.M.A.: Ethics Committee.
SEPT. 14.—New South Wales Branch, B.M.A.: Nomination of Candidates for Federal Committee.
SEPT. 14.—Central Medical Association, New South Wales.
SEPT. 19.—New South Wales Branch, B.M.A.: Organization and Science Committee.

Medical Appointments.

Dr. Rupert George St. John Naylor has been appointed Medical Officer of Beechworth Reformatory Prison, Victoria.

* * * *

Dr. Patrick Shaw (B.M.A.) has been appointed Medical Officer of Ballarat Gaol, Victoria.

* * * *

Dr. John Dale has been appointed Medical Officer of Health of the City of Melbourne.

* * * *

Dr. John Irwin Moore, Commissioner of Public Health, has been appointed Inspector of the School of Anatomy, Brisbane.

Medical Appointments Vacant, etc.

FOR announcements of medical appointments vacant, assistants, *locum tenentes* sought, etc., see "Advertiser," page xx.

COMMONWEALTH DEPARTMENT OF HEALTH: Medical Officer (Female).

ROYAL PRINCE ALFRED HOSPITAL, CAMPERDOWN, SYDNEY: Bacteriologist.

Medical Appointments: Important Notice.

MEDICAL practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

BRANCH.	APPOINTMENTS.
NEW SOUTH WALES: Honorary Secretary, 30 - 34, Elizabeth Street, Sydney.	Australian Natives' Association. Ashfield and District Friendly Societies' Dispensary. Balmain United Friendly Societies' Dispensary. Friendly Society Lodges at Casino. Leichhardt and Petersham Dispensary. Manchester United Oddfellows' Medical Institute, Elizabeth Street, Sydney. Marrickville United Friendly Societies' Dispensary. North Sydney United Friendly Societies. People's Prudential Benefit Society. Phœnix Mutual Provident Society.
VICTORIAN: Honorary Secretary, Medical Society Hall, East Melbourne.	All Institutes or Medical Dispensaries. Australian Prudential Association Proprietary, Limited. Mutual National Provident Club. National Provident Association. Hospital or other appointments outside Victoria.
QUEENSLAND: Honorary Secretary, B.M.A. Building, Adelaide Street, Brisbane.	Members accepting appointments as medical officers of country hospitals in Queensland are advised to submit a copy of their agreement to the Council before signing. Brisbane United Friendly Society Institute. Stannary Hills Hospital.
SOUTH AUSTRALIAN: Secretary, 207, North Terrace, Adelaide.	All Contract Practice Appointments in South Australia. Booleroo Centre Medical Club.
WESTERN AUSTRALIAN: Honorary Secretary, 65, Saint George's Terrace, Perth.	All Contract Practice Appointments in Western Australia.
NEW ZEALAND (WELLINGTON DIVISION): Honorary Secretary, Wellington.	Friendly Society Lodges, Wellington, New Zealand.

Medical practitioners are requested not to apply for appointments to positions at the Hobart General Hospital, Tasmania, without first having communicated with the Editor of THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, New South Wales.

Editorial Notices.

MANUSCRIPTS forwarded to the office of this journal cannot under any circumstances be returned. Original articles forwarded for publication are understood to be offered to THE MEDICAL JOURNAL OF AUSTRALIA alone, unless the contrary be stated.

All communications should be addressed to "The Editor," THE MEDICAL JOURNAL OF AUSTRALIA, The Printing House, Seamer Street, Glebe, Sydney. (Telephones: MW 2651-2.)

SUBSCRIPTION RATES.—Medical students and others not receiving THE MEDICAL JOURNAL OF AUSTRALIA in virtue of membership of the Branches of the British Medical Association in the Commonwealth can become subscribers to the journal by applying to the Manager or through the usual agents and booksellers. Subscriptions can commence at the beginning of any quarter and are renewable on December 31. The rates are £2 for Australia and £2 5s. abroad *per annum* payable in advance.

Wholly Set Up, Published and Printed at The Printing House, Seamer Street, Glebe, Sydney, N.S.W., by HENRY WILLIAM ARMIT, of The Point Road, Woolwich, Sydney, on behalf of THE AUSTRALASIAN MEDICAL PUBLISHING COMPANY, LIMITED, of 30-34, Elizabeth Street, Sydney.